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June 17, 2002

VIA HAND DELIVERY

Mr. Robert Taylor  
DOC, NOAA, GC  
Damage Assessment and Restoration Center  
7600 Sand Point Way N.E., Building 1  
Seattle, WA 98115-0070

Re: OxyChem -- Hylebos Waterway

Dear Bob:

Enclosed please find Occidental Chemical Corporation's Comments Regarding the "Hylebos Waterway Natural Resource Damage Settlement Proposal Report" (March 14, 2002 Public Review Draft) (the "Draft Settlement Report"). The Occidental comment paper is located in Volume 1 of 17 notebooks of materials substantiating the comments. While these materials are extensive, they all are addressed in the comments and their significance to the Draft Settlement Report are very clear. All materials are indexed, and data are provided both in paper and CD-ROM formats.

We would welcome the opportunity to discuss Occidental's comments with the Trustees' representatives and/or to address the Trustees' questions about them.

Mr. Robert Taylor

June 17, 2002

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I predict that the various PRPs submitting comments will begin requesting that you provide copies of other PRPs' comments. I suggest that you address such requests by generating an index of the comments submitted, identifying the PRPs and their counsel (or contact persons). The index can be distributed to counsel and we can arrange our own reciprocal exchanges of materials. However, if the Trustees decide to make any PRP's comments available to other PRPs (including federal PRPs), we would request that you inform me of any distribution or disclosure of the Occidental comments (and supporting materials), and identify the recipients.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Robert F. Bakemeier".

Robert F. Bakemeier

Enclosures

**OCCIDENTAL CHEMICAL CORPORATION'S COMMENTS**

**REGARDING**

***"HYLEBOS WATERWAY NATURAL RESOURCE DAMAGE  
SETTLEMENT PROPOSAL REPORT"***

**(Prepared by Commencement Bay Natural Resource Trustees)  
(March 14, 2002 Public Review Draft)**

June 17, 2002

[Settlement Communication]  
[Subject to Evidence Rule 408]

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## I. INTRODUCTION

Occidental Chemical Corporation ("Occidental") submits these comments regarding the *"Hylebos Waterway Natural Resource Damage Settlement Proposal Report"* (March 14, 2002 Public Review Draft) (the "Draft Settlement Report") prepared by the Commencement Bay Natural Resource Trustees (the "Trustees"). The Trustees distributed the Draft Settlement Report on April 12, 2002, soliciting review and comment in furtherance of the Trustees' proposal that potentially responsible parties ("PRPs") settle alleged natural resource damage ("NRD") claims pertinent to the Hylebos Waterway (within the Commencement Bay Nearshore/Tideflats Superfund Site) (the "CB/NT Site") under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601, et seq. ("CERCLA").

It should be emphasized that Occidental and the Trustees are engaged in ongoing confidential settlement discussions. Occidental submits these comments in furtherance of its long-standing efforts to compromise and settle the Trustees' alleged NRD claims. These comments should not be interpreted as a departure from the very productive settlement discussions that have occurred to date between Occidental and the Trustees. Occidental remains optimistic that the parties will finalize in the relatively near future the settlement that has been the subject of discussions between Occidental and the Trustees.<sup>1</sup>

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<sup>1</sup> Accordingly, these comments are for the purpose of compromise and settlement of certain claims alleged against Occidental by the Trustees. Pursuant to Evidence Rule 408 and other applicable law, these comments are not admissible in any proceeding. Occidental submits these comments while reserving all rights and defenses, without waiver of any arguments it may assert, and without admitting any fact, responsibility, fault or liability. Occidental's submission of these comments is not intended to waive or diminish the confidentiality that applies to Occidental's ongoing settlement discussions with the Trustees. Occidental's submission of these comments is not intended to waive, diminish or extinguish any privilege in any way. Finally, it should be observed that Occidental's comments regarding the Trustees' alleged NRD claims are not complete. Given the complexity of the Draft Settlement Report (and its supporting materials) and the relatively short comment period, Occidental's comments do not address various issues, inaccuracies, and omissions. However, Occidental has endeavored to focus upon some of the issues of particular significance to Occidental. Furthermore, in the event of litigation, Occidental likely would assert various arguments and defenses (and rely upon various facts, data, and analyses) that are not set forth in these comments and/or the accompanying materials.

However, the Draft Settlement Report significantly overestimates both the alleged injury to Hylebos Waterway natural resources and the alleged allocated shares of that injury attributed to the sites pertinent to Occidental's historical operations on the Hylebos. Most significantly, the Draft Settlement Report erroneously attributes releases of polychlorinated biphenyls ("PCBs"), polynuclear aromatic hydrocarbons ("PAHs"), and other compounds to the "Occidental" site (Site 57).<sup>2</sup> Those erroneous attributions are due primarily to the fact that the Trustees and their consultants apparently did not utilize (and/or have access to) certain Hylebos data and pertinent historical information. The data and historical evidence discussed below demonstrate that releases of PCBs, PAHs and other compounds (and related alleged NRD) should be attributed to the ship building, maintenance, and dismantling activities that occurred in the Hylebos Mouth area (on almost all sites) for nearly 85 years. Based upon the data and evidence described below (and appended in notebooks), the Trustees should reconsider the Draft Settlement Report and should decrease very significantly the allocated shares of PCBs and other compounds attributed to Occidental's historical operations at Site 57.

## II. OVERVIEW OF OCCIDENTAL'S COMMENTS

Occidental's comments regarding the Draft Settlement Report focus upon the following issues pertinent to alleged NRD, allocation issues, proposed settlement "credit" for restoration projects, and PRP-reimbursement of the Trustees' past assessment costs:

As far as alleged NRD is concerned:

- (a) the habitat equivalency analysis ("HEA") model, assumptions, and inputs used by the Trustees significantly overestimate the alleged injury to Hylebos Waterway natural resources—the Trustees should re-evaluate the analysis, using the actual Hylebos cleanup plans, a more appropriate historical discount rate, and refined recovery time frames;
- (b) appropriate consideration of all of the existing Hylebos Waterway chemical characterization data demonstrates that the chemical "footprints" used in the

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<sup>2</sup> These comments utilize the Draft Settlement Report's site numbering system, as depicted in its Figures 2-2 and Appendix 1 site map (attached to these comments as Attachment A in this Volume I). Please note that some of the materials submitted with these comments refer to "Site 56" as "Parcel 1" and refer to "Site 57" as "Parcel 2," as explained in more detail in those materials.

Draft Settlement Report inaccurately characterize chemical distributions within the Waterway;

- (c) alleged injuries to flatfish (associated with PAH exposure) and benthic infauna (associated with multiple chemical exposures) have been grossly exaggerated, and are not consistent with the considerable data available from Trustee, EPA, and other investigations that document relatively limited biological effects within the Hylebos Waterway; and
- (d) the existing chemical and biological data demonstrate that the Mouth area of the Hylebos Waterway represents a separate region of chemical exposures and effects, geographically divisible from exposures and effects occurring elsewhere within the Hylebos Waterway and the CB/NT site.

As far as allocation issues are concerned:

- (a) the Draft Settlement Report should more rigorously apply the "principle of chemical proximity" that is reflected in the Hylebos data—the data (and corroborating factual history) demonstrate that the chemical compounds detected in the Waterway's sediment are generally proximate to their sources and have not migrated significant distances from those sources;
- (b) while the presence of chemical compounds at the shoreline (the "shoreline chemistry") generally reflects nearby upland operations, and while the shoreline chemistry is often (but not always) reflected in the subtidal sediments, these generalizations must be tailored in their application to particular facts and circumstances—much of the shoreline chemistry in the Mouth area (especially at Site 57) reflects discharges/disposal from, and associated with, the ship building, maintenance and dismantling (and related operations) from all sites in the Mouth area;
- (c) an allocation analysis based upon the accurate chemical "footprints" demonstrates that the ship building, maintenance and dismantling operations were the sources of Mouth area chemistry erroneously attributed to Site 57 in the Draft Settlement Report's allocation (particularly for PCBs and PAHs);
- (d) the Draft Settlement Report's allocation of alleged NRD to Site 57 is based upon incomplete factual information—the history of the Hylebos Mouth area corroborates the chemical data and demonstrates that the ship building, maintenance and dismantling operations that occurred throughout the

Mouth area were the primary, if not exclusive, sources of the PCBs, PAHs and other compounds erroneously attributed to Site 57 in the Draft Settlement Report's allocation; and

- (e) the unique history and chemical "footprints" associated with the "North Ten Acres" of Site 57 (particularly the "Navy/Todd Dump" at that location) justify treating the "North Ten Acres" as part of Site 56 for allocation purposes.

As far as settlement "credit" for restoration projects is concerned:

- (a) the Draft Settlement Report proposes the use of an overly conservative restoration time frame of ten years—empirical data from regional restoration projects clearly demonstrate that a period of four years accurately estimates the restoration time frame; and
- (b) Trustees should incorporate the concept of "priority habitat values" to appropriately credit restoration projects that provide especially critical habitat functions.<sup>3</sup>

As far as PRP-reimbursement of the Trustees' past assessment costs is concerned:

- (a) the past Trustee assessment costs should be more broadly distributed to the numerous PRPs (including some distribution on a per capita basis)—this is fair in that it would recognize the assessment's "benefit" to all parties and account for uncertainty and lack of information regarding many parcels and parties; and
- (b) given the circumstances of Occidental's long-pending settlement discussions with the Trustees, and the substance of the proposed Occidental settlement, Occidental should not be expected to bear past assessment costs.

Occidental's comments are set forth in this document below, and are supported by the appendices and evidence/analyses submitted in notebook Volumes I through XVII.<sup>4</sup>

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<sup>3</sup> Occidental also has concerns regarding some aspects of the general "adaptive management" and restoration "protocols" discussed in the Draft Settlement Report. However, given that such matters are most appropriately addressed in the context of a specific restoration project proposal, Occidental does not discuss its concerns in these comments.

### **III. COMMENTS REGARDING ALLEGED NRD ISSUES**

#### **A. The HEA Model, Assumptions, And Inputs Used By The Trustees Significantly Overestimate The Alleged Injury To Hylebos Waterway Natural Resources—The Trustees Should Re-Evaluate The Analysis, Using The Actual Hylebos Cleanup Plan, A More Appropriate Historical Discount Rate, And Refined Recovery Time Frames.**

##### **1. The analysis should be based upon the actual cleanup plan for the Hylebos Waterway.**

The Draft Settlement Report is based upon the proposed Hylebos Waterway cleanup maps contained in EPA's June 2000 Explanation of Significant Differences (the "2000 ESD"). Those maps inaccurately depict the cleanup that is being designed by Occidental and the Port of Tacoma (the "Port") for Segments 3, 4, and 5.

As described in more detail below, subsequent to finalization of the Hylebos Waterway Pre-Remedial Design Evaluation Report in 1999, Occidental and others collected considerable additional data within the project area to refine the nature and extent of sediment-associated chemicals at the site and to verify natural recovery predictions, among other elements. Using these data, remediation plans to achieve performance standards and other requirements set forth in the CB/NT Record of Decision ("ROD") and 2000 ESD have been appropriately updated. The remedial designs are also more fully described in the Draft 90 Percent Remedial Design Submittal package prepared in June 2001, and the Remedial Design Work Plan provided to EPA in April 2002. The current cleanup maps are attached as Figures 1 and 2. The cleanup design includes significantly more sediment dredging than contemplated previously.<sup>5</sup> Inclusion of the actual cleanup plans in the HEA will reduce the total magnitude of the alleged NRD attributed to Segments 3, 4, and 5.

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<sup>4</sup> An index to notebook Volumes I through XVII is attached to the end of these comments as Attachment B in this Volume I.

<sup>5</sup> Occidental and the Port have submitted these cleanup plans to EPA, and they are in the process of EPA review. Occidental believes that EPA will approve the pertinent design documents and work plans in the near future.

**2. The analysis should be based upon an historical discount rate of 2% rather than 3%.**

The Draft Settlement Report's HEA model utilized a 3% historical discount rate to calculate alleged past NRD in terms of present equivalent values. The 3% historical discount rate is too high, and should be adjusted to 2%. This adjustment is appropriate to address the "consumer rate of time preference," best represented by the rate of return on riskless financial instruments (e.g., short-term government bills) minus the rate of inflation.

The period 1980 through present includes a particularly high interest rate period in the early 1980s with double-digit values. These interest rates are an anomaly and greatly inflate the average discount rate calculation over the 1980-2002 time period. A much longer time period of riskless short-term interest rates should be used to capture the true discount rate. Studies by Lind and Freeman, both quoted in the Draft Settlement Report, suggest that the proper discount rate to capture a measure of time preference by the public should be about 2%. Thus, a 2% discount rate is the proper rate to use in the calculation of past alleged service damages.

**3. The analysis should be based upon a recovery time frame of ten years for "natural recovery" areas of the Hylebos.**

As described in the 1999 Hylebos Waterway Pre-Remedial Design Evaluation Report, detailed evaluations of natural recovery processes revealed that the pertinent natural recovery areas in Segments 3, 4, and 5 would recover to well below sediment quality objective ("SQO") criteria in less than 10 years following remediation of adjacent waterway areas. Significantly, these predictions were verified as conservative overestimates of the actual natural recovery time frame during the most recent (2001) Occidental/Port sampling of Segments 3 & 4, conducted in part to verify natural recovery predictions.<sup>6</sup> For example, in the federal navigation channel area immediately offshore of Taylor Way Properties (Site 47), elevated surface concentrations of PCBs and other chemicals previously detected in this area had declined substantially over the 5-year sampling record, in many cases to below the Trustees' conservative restoration goal of 130 ug/kg. Many other examples of verified natural recovery also exist within the project area. Thus, a 10-year (roughly linear development) natural recovery time frame estimate should be incorporated into the Draft Settlement Report's HEA. The natural recovery time frame of 25 years assumed

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<sup>6</sup> Anchor, 2001. Hylebos Segments 3 & 4 Supplemental Data Report, Phase I Hylebos Mouth Cleanup (October 3, 2001) (copy enclosed in Volume IV).



in the Draft Settlement Report is overly conservative for the limited areas of natural recovery areas within Segments 3, 4, and 5 of the Hylebos Waterway.

**B. Additional Chemistry Data Are Available For The Hylebos And Should Be Incorporated Into The Draft Settlement Report's Chemical "Footprint" Analysis To Generate More Accurate Distributions Of The Nature And Extent Of Sediment-Associated Chemicals.**

- 1. Considerable additional chemistry data have been collected within Segments 3, 4 & 5 of the Hylebos Waterway, primarily to support EPA cleanup plans, and should be added to the Trustee database.**

The Trustee's analysis of chemical footprints within the Hylebos Waterway appears to have been based on data only from readily available sources (e.g., Ecology's SEDQUAL database and Trustee sampling conducted in the mid-1990s). However, this data set represents only a portion of the total amount of quality-assured data available for the project area. Furthermore, in some cases the available SEDQUAL data suffered from matrix interferences resulting in significant quality deficiencies (e.g., grossly elevated detection limits). Many of these earlier data deficiencies have now been superseded with more reliable sampling and analysis data, collected as part of ongoing remedial design activities. These newer data, generally depicted on the attached Figure 3 and outlined below, should be incorporated into the Draft Settlement Report's "footprint" analysis.

As discussed above, Occidental and others have collected considerable additional chemistry data within Segments 3, 4 & 5 of the Hylebos Waterway. Recent (i.e., post-Hylebos Cleanup Committee ("HCC") pre-remedial design data available for the project area include additional surface sediment (0 to 10 cm) characterization data, as generally depicted on the attached Figure 3. All of these reference documents for these newer data are enclosed in Volumes II, III, and IV, and include the following:

- Two separate studies of the Port Industrial Yard (Pier 25) (Site 56) embankment area performed by Conestoga-Rovers and Hart Crowser (CRA 1998. Field Activities and Data Report (Hart Crowser 1998. Pre-Remedial Design Study, Volumes I and II) (enclosed in Volume II).
- Studies of the former Occidental and PRI properties (Site 57) embankment and Area 5106 performed by Conestoga-Rovers pursuant

to Occidental's Administrative Order on Consent ("Occidental AOC") for Removal Activities—Embankment and Area 5106, EPA Docket No. 10-97-0011-CERCLA (pertinent reports were previously submitted to the Trustees under the AOC). These studies include high-resolution analysis of PCBs in this area to address matrix effects that limited earlier characterization efforts (earlier data were reported as nondetected "U" below elevated detection limits).

- A PCB "fingerprinting" analysis of the Mouth area and shorelines of Sites 56 and 57 (Affidavit of Alan F. Weston Regarding PCB Distributions on the Embankments and in the Sediments at the Mouth of the Hylebos Waterway) ("Weston Affidavit") (enclosed in Volume II).
- Studies of the U.S. Navy (Site 59) embankment performed by Anchor Environmental and Conestoga-Rovers (Anchor and CRA 2001. Navy Bank Surface Sediment Characterization Data Report) (enclosed in Volume III).
- Studies of the Port's "Parcel 4" (Site 60) embankment performed by Hart Crowser (Hart Crowser, 1998. Memorandum regarding Parcel 4 Investigation) (enclosed in Volume III).
- Studies of the Sound Refining (Site 41) mudflat performed by Anchor Environmental (Anchor 2000. Sound Refining Mudflat Area Focused Site Characterization Data Report) (enclosed in Volume IV).
- Supplemental characterization of sediments within Segments 3 and 4 performed by Anchor Environmental (Anchor 2001. Hylebos Segments 3 & 4 Supplemental Data Report, Phase I Hylebos Mouth Cleanup) (enclosed in Volume IV).

These additional data should be added to the Trustee database to generate more accurate distributions of the nature and extent of sediment-associated chemicals. To facilitate integration of these data into the Trustee database, we have enclosed a CD-ROM containing the additional data in Attachment C.

**2. Poor quality "non-detect" (grossly elevated "U" value) PCB data should be disregarded to generate accurate chemical "footprints."**

"Non-detect" (qualified "U") data evidently were used in the Draft Settlement Report (at an assumed value of 50% of the detection limit) to quantify alleged NRD and to generate chemical "footprints" for allocation purposes. However, in many cases, such data reveal nothing about the presence or absence of particular chemistry and should be rejected for the purpose of the chemical footprint analysis. Matrix interferences associated with PCB analyses along portions of the Occidental embankment further compounded this situation, as the resultant detection limits in some cases were greatly elevated (to more than 400 times higher than the Trustees' screening level for PCBs). For the Occidental embankment area, high-resolution analyses of PCBs in this area were subsequently performed by Conestoga-Rovers to provide a more accurate characterization of PCB concentrations (see Occidental AOC data reports; Volume II; and Attachment C). In such cases, the high-resolution PCB analyses should replace the earlier non-detect data. Six (6) specific samples that suffered from such matrix interferences, and which should be rejected for the purpose of the PCB footprint analysis, are identified in the attached Table 1. Sediment PCB distributions in these sampling areas are more accurately characterized using the considerable additional chemistry data, including high-resolution analyses, that have been collected within the Hylebos Waterway, as provided in Volumes II, III, and IV, and in Attachment C.

**3. Total-DDT data collected using "standard" analysis methods generated false-positive detections of these chemicals, and should be disregarded to generate accurate chemical "footprints."**

Similar to the PCB situation described above, high-resolution analyses of DDT and its metabolites failed to confirm the elevated detections of these chemicals as reported in the original "standard" chemical determinations. The cause of such false-positive determinations was also attributed to matrix interferences. For example, as part of recent sampling and analysis of the Site 59 embankment (see Volume III) and PSSDA determinations in Segment 5, certain samples with poor spectral matches or matrix interferences were re-extracted, cleaned up via HPLC fractionation, and reanalyzed for DDT and its metabolites using GC/MS selective ion monitoring. In many cases, the initial report of possible DDT and metabolite detections in these samples was not confirmed. These analyses confirm previous assessments of the Mouth area data. See Weston Affidavit, ¶ 27 (enclosed in Volume II); HCC Event 1A and 1B Data Report (June 3, 1996) (p. 33) ("[o]ther (nonconfirmed chlorinated

pesticide hits (i.e., other than the DDTs and metabolites at the head of the waterway) are believed to be false positives since they are associated with samples showing generally high GC/ECD chromatographic activities"). Accordingly, the Draft Settlement Report should be revised to eliminate the alleged NRD attributed to the DDT and related compounds (DDE and DDD) that are designated as "Type II Non-Allocated" by the Draft Settlement Report with an "apparent physical connection" to Site 57.

**4. Incorporation of the additional chemistry data and a more rigorous evaluation of the previous data (e.g., rejecting grossly elevated "U" values) results in more accurate and defensible chemical "footprints."**

For the purpose of confirming for the Trustees the importance of incorporating the additional available data and more rigorous QA/QC into the chemical footprint analyses, we have integrated these data into updated and refined chemical distribution maps for Segments 3 through 5 of the Hylebos Waterway. In order to allow for apples-to-apples comparisons, we utilized the same contouring assumptions as were described in the Draft Settlement Report (e.g., log-transformation, nearest neighbor, inverse distance weighting factors, etc). Plots of total PCB, total polynuclear aromatic hydrocarbon ("PAH"), hexachlorobenzene ("HCB"), and hexachlorobutadiene ("HCBd") footprints are provided in the attached Figures 4 through 7, respectively. In several important instances, the refined chemical footprints are substantively different from the preliminary footprints presented in the Draft Settlement Report. The significance of these differences is discussed further in later sections of these comments.

**C. Alleged Injuries To Flatfish (Associated With PAH Exposure) And Benthic Infauna (Associated With Multiple Chemical Exposures) Have Been Grossly Exaggerated, And Are Not Consistent With The Considerable Data Available From Trustee, EPA, And Other Investigations That Document Relatively Limited Biological Effects Within The Hylebos Waterway.**

**1. Updated PAH regression relationships should be used in the Draft Settlement Report's injury estimate.**

Liver lesions in English sole (*Pleuronectes vetulus*) have been identified by various researchers as biomarkers for exposure from PAHs. The Trustees have proposed sediment quality restoration criteria for PAHs using synoptic sediment PAH chemistry and liver lesion data from sites along the West Coast, including the Hylebos

Waterway and other Puget Sound sites. However, the Trustees' initial work attempting to correlate sediment and liver lesion data did not consider either the home range behavior of flatfish, or the considerable sediment PAH chemistry data available from other investigations within the fish sampling sites.

Building on the Trustees' initial work, Anchor Environmental has developed areal-weighted home range PAH exposure estimates for English sole collected throughout Puget Sound. Spatially and temporally related sediment chemistry and English sole liver lesion data from urban and background areas around Puget Sound were compiled from the Washington Department of Ecology SEDQUAL database, Washington Department of Fish and Game, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, and other sources. Areal-weighted average surface sediment concentrations of high molecular weight PAH ("HPAH") were calculated from Theissen polygons using a geographical information system platform. Home range exposure estimates for fish collected from the Hylebos Waterway, other areas of Commencement Bay, Eagle Harbor, and Elliott Bay were calculated using all relevant and available sediment data collected within a 1 kilometer radius from the centroid of the trawl line where English sole were collected. Puget Sound background sediment HPAH concentrations were estimated as an arithmetic average of nonurban areas where fish were collected where data were available. The relationship between home range exposure estimates and incidences of liver lesions were examined graphically and using non-linear "hockey-stick" regression.

Significantly, the areal-weighted home-range-based HPAH exposure estimates for the fish sampling sites were 2 to 5 times greater than those estimated using only the Trustees' limited synoptic trawl line samples. Sediment quality thresholds derived by non-linear "hockey-stick" regression were 2 to 3 times greater using the areal-weighted home range exposure estimates. These refinements, as generally depicted on Figure 8, should be incorporated into the Trustees' injury estimates, and will result in significant reductions in PAH injury estimates. Injury estimates will be particularly reduced near the Sound Refining facility (Site 41) in Segment 4, where PAH concentrations are among the lowest in the Hylebos Waterway (attached Figure 5). The available data clearly indicate that PAH exposure to English sole occurs primarily within the upper reaches of the Hylebos Waterway.

**2. Confirmatory biological data should be considered to generate accurate chemical "footprints."**

The Draft Settlement Report's injury estimates should also utilize the results of confirmatory sediment biological effects analyses for estimating injuries to benthic infauna. These data, presented in detail in the 1999 Hylebos Waterway Pre-Remedial

Design Evaluation Report, reveal that even though HCB and HCBd chemical concentrations exceed the Trustee's conservative restoration screening criterion throughout much of Segment 5 of the Hylebos Waterway (attached Figures 6 and 7), many of these same areas did not exhibit even minor adverse effects in confirmatory bioassay tests and benthic invertebrate determinations. Confirmatory biological testing protocols have been defined under the Commencement Bay ROD and Washington State Sediment Management Standards, and have also been adopted by the Commencement Bay Trustees as restoration goals.<sup>7</sup> Such confirmatory bioassay "passes" are depicted on Figures 6 and 7, and override any determination of potential toxicity to benthic invertebrates as may be indicated solely based on chemical comparisons. Again, these data should be integrated into the Draft Settlement Report's analysis.

**D. The Data Demonstrate That The Mouth Area Of The Hylebos Waterway Is Geographically Divisible From Chemical Exposures And Effects Occurring Elsewhere Within The Hylebos Waterway And The CB/NT Site.**

As discussed above, the attached Figures 4 through 7 present a comparison of existing sediment characteristics with the Trustees' conservative restoration goals for sediment PCBs, PAHs, HCB, and HCBd, respectively. Appropriate biological effects measures are also summarized in the attached Figures 6 through 8. These data reveal that the Mouth of the Hylebos Waterway represents a separate region of chemical exposures and effects, geographically divisible from exposures and effects occurring elsewhere within the Hylebos Waterway and the CB/NT site. Biological exposures and effects associated with historical releases of chemicals from the "Occidental" site (Site 57), located within the middle of Segment 5, would therefore be confined to this geographic area. Accordingly, the Draft Settlement Report should not attribute to Site 57 any chemistry (or alleged NRD) located in other Hylebos segments.

Moreover, based on fish stomach content analyses of chemical exposures to PCBs and PAHs, as reported by the Trustees in various technical reports, relatively little food chain exposure to these persistent compounds occurs within the Mouth area, compared with other regions of the Hylebos Waterway. Divisibility of the Hylebos Waterway Mouth area is also supported by the results of sediment transport analyses, which reveal little movement of bed sediment (HCC 1999). Divisibility is also

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<sup>7</sup> National Marine Fisheries Service, 2000. "Commencement Bay Natural Resource Trustees Sediment Cleanup Goals for Active Natural Resource Restoration Projects."

consistent with the absence of biological effects (toxicity and bioaccumulation) as determined by the PSDDA evaluations performed within the Mouth Area.<sup>8</sup> All information considered, alleged injuries associated with historical releases of chemicals from the "Occidental" site are clearly confined to the Hylebos Mouth area.

### **III. COMMENTS REGARDING ALLEGED NRD ALLOCATION ISSUES**

#### **A. The Draft Settlement Report Should More Rigorously Apply The "Principle of Chemical Proximity" That Is Critical To Source Attribution And Allocation Of Alleged NRD.**

The allocation component of the Draft Settlement Report generally focuses upon the proximity of sources to particular regions of alleged NRD. This is appropriate because the data demonstrate that chemicals found in the Hylebos sediments are proximate to the source(s) of discharge. Impacted sediments have not migrated significant distances, and discharges have not had widespread or far-reaching impacts. This "principle of chemical proximity" is clearly demonstrated by the data contour maps for PCBs, PAHs, HCB, and HCBd provided in the attached Figures 4 through 7, respectively, as discussed above.

Based upon the data contour maps and the other data discussed above in Section II(c), the Draft Settlement Report erroneously attributes chemicals and pertinent alleged NRD to Site 57. The Draft Settlement Report should be revised to reduce the Site 57 allocation accordingly.

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<sup>8</sup> Occidental and the Port have performed PSDDA testing of dredged material management units (DMMUs) throughout the Mouth area, under the supervision of the Dredged Materials Management Program (DMMP), to evaluate the potential for open-water disposal or beneficial reuse of some of the dredged material. Results of the PSDDA sampling and analysis, including confirmatory biological testing, are provided in the Hylebos Waterway Phase I Cleanup, PSDDA Suitability Report (prepared for Port of Tacoma and Occidental Chemical by Anchor Environmental, LLC, Seattle, WA, June 13, 2000). Approximately 200,000 cubic yards of sediment, generally located on the northeast side of the Hylebos Waterway Mouth as depicted on the attached Figure 1, comply with PSDDA open-water disposal or beneficial reuse criteria, and will be managed through the DMMP. This is being done to accomplish a complete cleanup of the site, and to ensure that only sediments requiring confined disposal are contained in the Slip 1 Confined Disposal Facility to be constructed by the Port and Occidental.

**B. The Mouth Of The Waterway Should Be Allocated Separately From The Rest Of The Waterway—The Mouth Is A Divisible Component Of A Huge And Diverse Superfund Site.**

The concept of "divisibility" has been recognized and applied by numerous courts as a defense to joint and several liability in CERCLA cases. The concept also is recognized more generally in pertinent state and common law. Thus, a party is not held jointly and severally liable where it can demonstrate that the harm at a given site is divisible. Divisibility of liability is required when, "there are distinct harms or a reasonable basis for determining the contribution of each cause to a single harm." Redwing Carriers, Inc. v. Saraland Apts., 94 F.3d 1489, 1513 (11<sup>th</sup> Cir. 1996); see also, e.g., Acushnet Co. v. Mohasco Corp., 191 F.3d 69 (1<sup>st</sup> Cir. 1999); Bell Petroleum Services, Inc. v. EPA, 3 F.3d 889 (5<sup>th</sup> Cir. 1993); U.S. v. Alcan Aluminium Corp., 990 F.2d 711 (2d Cir. 1993); U.S. v. Alcan Aluminium Corp., 964 F.2d 252 (3<sup>rd</sup> Cir. 1992). In this particular case, the Hylebos contains "distinct harms" represented by the distinct areas of alleged NRD and/or remediation. The case of U.S. v. Broderick Investment Co., 862 F. Supp. 272, 277 (D. Colo. 1994) ruled that divisibility had been established by "separate and distinct geographic areas of contamination." Accordingly, a party was held liable for one geographic area, but was held not liable for the other area. That same result should apply to the Hylebos.

The divisibility of the Mouth area from the remainder of the Hylebos is clearly demonstrated by the Waterway's chemical distributions and biological results, as discussed above. As a result the allocation of alleged NRD should focus separately upon the Mouth area. The parties responsible for the Mouth's sediments are not liable for any of the alleged NRD attributable to any other section of the Hylebos. Their responsibility for assessment of other Waterway areas should be limited as well.

**C. The Primary Sources Of Chemicals Detected In the Mouth Area Were The "AKWA" Site (Site 56) (And Related Operations At Nearly All Other Sites In The Mouth Area) And The "Occidental" Site (Site 57).**

The presence of HCB, HCBd, PCBs, metals, and PAHs in the Mouth area sediments point to Sites 56 and 57 as the primary sources of those substances in the area. Releases from other Mouth area sites also contributed some of these substances. Although it is somewhat challenging to differentiate between the contributions made by these sites to the Mouth's chemistry, the facts, data and reasonable inferences are available to do so. When one assesses the data station-by-station, undertakes a "source attribution analysis," considers the historical evidence, and accounts for the commingling of chemistry, it appears that operations associated with Sites 56 and 57



should bear the majority of the Mouth's alleged NRD allocation. Other Mouth sites should bear smaller shares.

This "big picture perspective" is demonstrated by three important conclusions. First, Site 57 is the source of most, but not all, all of the HCB, HCBd and related volatile organic compounds ("VOCs") in the Mouth sediment. Second, Site 56 and related operations on Sites 57, 59, 60, and 51 (essentially the entire Mouth area) were the primary, if not exclusive, sources of the PCBs and PAHs in the Mouth sediments, and contributed most significantly to the various metals detected on the Mouth shorelines. There is ample information in the sampling data to justify that conclusion. There is overwhelming evidence to corroborate that conclusion, as discussed below, in the historical records from the National Archives, in the U.S. Navy's admissions regarding the ubiquitous presence of PCBs in Navy ships, and in PCB data from other Navy facilities (including the "Manchester Annex" located just across Puget Sound near another Naval shipyard).

#### **IV. SITE 56 (AND RELATED ACTIVITIES ASSOCIATED WITH NEARLY ALL OTHER MOUTH SITES)**

**The Historical Facts Demonstrate That the Ship Building, Maintenance, and Dismantling Activities That Occurred in the Hylebos Mouth Area (In Connection With Nearly All Sites) Were the Primary, If Not Exclusive, Sources of the PCBs, PAHs, and Other Compounds Erroneously Attributed to Site 57 (the "Occidental" Site) in the Draft Settlement Report's Allocation of Alleged NRD.**

##### **A. A Chronology Of The Mouth Area's Ship-Related Industrial History**

The following is a chronology of the Mouth area's ship-related industrial history that is based upon the materials provided in notebooks with these comments. The events are addressed in more detail below in Section IV(B), in the context of a description of the materials accompanying these comments in Volumes II through XIII that provide much of the historical background. The pertinent history demonstrates that Site 56 is inappropriately named in the Draft Settlement Report—Site 56 should be called the "Navy/Todd Shipyard.")

##### **1917-1925 World War I Ship Building**

Todd Seattle Dry Docks, Inc., a Todd Shipyards corporation, constructed and operated a shipyard on Site 56 and a portion of Site 57 (the "North Ten Acres") for the

construction of ships during and after WWI. The U.S. Maritime Commission and the U.S. Navy supervised the work at the yard.

### **1925-1939 Ship Building and Shipyard Demolition**

The shipyard continued to exist, but little is known about its activities. Some structures were demolished. In 1937, Occidental's predecessor (Hooker Electrochemical Company) ("Hooker") purchased the "North Ten Acres" of Site 57.

### **1939-1946 World War II Ship Building**

In 1939, Seattle-Tacoma Shipbuilding Corporation ("STSC"), a Todd Shipyards subsidiary, constructed a shipyard on Site 56 under contract with the U.S. Maritime Commission. STSC, later renamed Todd Pacific Shipyards, operated the shipyard from 1939 to 1946. The U.S. Navy began supervising work at the yard by May of 1942, and perhaps earlier. Related wartime activities also occurred at Sites 57, 59, and 60. During the war, the Navy and Todd used Site 57's "North Ten Acres" for a variety of shipyard activities, including: a "scrap disposal yard," waste incineration, vehicle maintenance (including a 2000-gallon fuel tank on the shoreline), and a sewer system that discharged to the Hylebos. In 1945, shipyard wastes were dumped on the shoreline and pushed into the Hylebos Waterway. This area is now described as the "Navy/Todd Dump."

### **1946-1958 U.S. Naval Station Tacoma**

Following WWII, the Navy used the following sites for mothballing, berthing, maintaining, and/or dismantling Navy ships: Sites 56, 57, 59, 60 and 51. The "North Ten Acres" (including the "Navy/Todd Dump") used by the Site 56 shipyard during the war was returned to Occidental's predecessor and was incorporated into its operations. However, the Naval Station Tacoma continued to use the sewer system that discharged to the Hylebos.

### **1960-2002 Shipyard for Building, Maintaining, Repairing and Dismantling Ships**

The Port of Tacoma purchased most of the Naval Station property from the U.S. government in 1960, and has since leased portions of the property to many businesses, including several ship-related businesses. From 1960 to 1984, Zidell Dismantling operated at Site 56; from 1969 to 1987, Tacoma Boat Building operated at Site 56; and from 1986 to 1997, AK-WA Shipbuilding operated at Site 56. The government retained portions of Sites 59 and 60 for the U.S. Naval and Marine Corps Reserve and its homeport for vessels. The docks at Sites 57, 59, and 60 were used for

Navy and Reserve vessels. The Reserve Center operates at present, continuing the moorage and maintenance of vessels at Sites 59 and 60.

**B. The Draft Settlement Report's Preliminary Conclusions Regarding PCBs, PAHs, And Metals In the Mouth Area Should Be Revised Significantly To Address Additional Evidence Regarding The Ship-Related Industrial Activity That Released Those Chemicals To the Hylebos.**

The Draft Settlement Report is based upon incomplete information regarding the nearly 85-year history of ship-related industrial activity that has occurred throughout the Mouth area, on nearly every site. In particular, it is evident that preparation of the Draft Settlement Report was not based upon voluminous records located in the National Archives, pertinent information generated by the U.S. Navy, and other relevant records. All of that historical evidence demonstrates conclusively that decades of ship construction, painting, maintenance, abrasive blasting, berthing, bilge-dumping, and demolition were the sources of the PCBs, PAHs, phthalates, and metals (antimony, arsenic, cadmium, chromium copper, lead, mercury, nickel, TBT, zinc, etc.) detected in the intertidal and subtidal Mouth sediments. Those activities also likely contributed to releases of some VOCs (trichloroethylene, HCB, HCBd, etc.) given the documented use and disposal of solvents, etc.

In notebooks submitted with these comments (numbered Volumes V through XVII), Occidental provides the Trustees with the historical information, photographs, data, and other evidence described below that substantiate the conclusions set forth in these comments. These materials include: (a) extensive evidence regarding the history and hazardous substances pertinent to the Mouth area's ship-related industrial activity (items 1 through 8, below) (see Volumes V through XIV); (b) U.S. Navy reports regarding the presence of PCBs throughout many materials and fluids used in Navy ships (item 9) (Volume XV); (c) EPA guidelines regarding hazardous substances released by shipyards (item 10) (Volume XV); (d) data and diagrams showing the locations of PCBs and metals detected in the Site 56 stormwater sewer system discharging to the Hylebos Waterway (item 11) (Volume XV); (e) articles and descriptions of Congressional hearings regarding the environmental problems caused by Navy ship dismantling (items 12 through 14) (Volume XV); (f) data and information from other Navy facilities demonstrating releases of PCBs, PAHs, metals, and other chemicals found in the Mouth of the Hylebos (items 15 and 16) (Volume XVI); and (g) materials regarding the Washington Department of Ecology's concerns about extensive Navy spills of oil, fuel, and hazardous substances in Puget Sound (item 17) (Volume XVI).

**1. The Report on a Search of National Archives Documents  
Relevant to the Use and Disposal of Hazardous Substances at  
Site 56 (and Other Sites in the Mouth Area) (Volumes V-XI)**

This report provides some information regarding the development of Site 56 by Todd (in conjunction with the United States) for World War I shipbuilding, but focuses primarily upon the extensive World War II activities under the ownership/control of Todd Shipyards and the United States, as well as the subsequent use of the site as the United States Naval Station--Tacoma until 1960. It should be noted that the World War II activities, the Naval Station, and other military operations, expanded well beyond Site 56 to encompass almost the entire peninsula at the Mouth of the Hylebos, up to the 11<sup>th</sup> Street bridge. Those activities were conducted on the "North Ten Acres" of the Occidental facility on Site 57, as well as on Sites 59 and 60, and other properties along Alexander Avenue. For nearly two decades, Occidental and Site 57 were literally surrounded by United States government activities that contributed significantly to the chemistry residing in the sediment in the Hylebos Waterway.

During World War I, the shipyard at Site 56 was one of the largest in the world, employing as many as 10,000 people at the peak of its activity. In the early 1920s, approximately twenty-five cargo ships, three fast cruisers and a passenger liner were built at the shipyard. Maps and photographs show a shipyard with seven shipways extending into Commencement Bay, and several large structures including a joiner and paint shop, a sheet metal shop, a boiler shop, a blacksmith shop, a machine shop, a shear and punch shop, and a foundry, as well as numerous smaller storage sheds, a transformer house and fuel oil tanks.

Substantial ship construction activities also occurred at the shipyard during World War II. From 1939 to 1945, eighty-five keels were laid and eighty-two ships were launched, including fifty-six escort aircraft carriers, and several cargo ships, gasoline tankers, army transports, destroyer tenders and seaplane tenders. At the peak of operations, the shipyard occupied nearly the entire peninsula at the Mouth of the Hylebos, and employed more than 28,000 people. Although the shipyard structures had been demolished and rebuilt since World War I, the new yard's basic design appears to have been similar to that of the original shipyard. During World War II, there were eight shipways (extending into Commencement Bay), four outfitting piers (one located along the Hylebos, two extending into Commencement Bay and one located along the Wapato, which is now known as the Blair Waterway) and a commissioning pier (located along the Hylebos). The yard itself consisted mainly of two large steel fabricating and assembly shops, a shops building, a main office and

warehouse building, a sheet metal shop, a paint and oil building, a hospital and inspection building, a restaurant building, and several transformer houses.

Documents available from the National Archives reveal that the Tacoma shipyard used numerous hazardous substances in its operations during World War I and World War II. In particular, records indicate that the yard had many sources of the following substances that have been detected in the nearby sediments and the shoreline of the Waterway's Mouth area:

PCBs. Sources of PCBs at the shipyard included transformers, various construction materials, hydraulic fluids and greases. The use of transformers containing PCBs was common at shipyards of this era. According to maps, reports, and photographs from the World War II shipyard, transformer houses were located immediately adjacent to the Hylebos bulkhead line just east of the Shops Building and southeast of the Paint and Oil Building, along each shipway and on the three outfitting piers. See Volumes V and XII. Records from the Port of Tacoma confirm the presence of PCBs in Site 56 transformers, and provide evidence of PCB releases from those transformers. See Volume XIII (Port 104(e) response) (item 6, below). PCBs were also present in numerous construction materials (including wool felt insulation, electrical cables, plastics, rubber and paints) that were used in ship construction at that time. In comments submitted to EPA during PCB rulemaking proceedings, the Navy has acknowledged that PCBs were used in many materials found throughout Navy ships. See Volume XV (item 9, below).

Metals. Numerous substances used throughout the yard contained metals. Paints contained lead, mercury, copper, zinc, chromium, nickel, and/or tributyl-tin. Welding materials contained lead, chromium and iron oxides. Abrasive blasting utilized slag that likely contained copper, arsenic and other heavy metals. See Volumes V and XII (indexes of World War II ship components) (item 2, below).

VOCs. Solvents containing VOCs were used throughout the shipyard. The U.S. Bureau of Ships indexes of specifications for ship components confirm that trichloroethylene and other solvents were used on Navy ships. See Volume XII (item 2, below).

PAHs. Petroleum and oils were used in connection with various activities that took place throughout the yard. Petroleum and oil fuels were used to operate vehicles, cranes and other machinery. A vehicle maintenance building and a 2000-gallon fuel tank were located on the shoreline of the "North Ten Acres" of Site 57. See Volume XII ("North Ten Acres" real estate records) (item 3, below). Oils were also used to lubricate machinery throughout the yard. See Volumes V, XII

(item 2, below), and XVI (Ecology Complaints regarding Navy fuel and oil spills) (item 17, below).

During wartime, in particular, Naval shipbuilding operations generally emphasized the rapid production of ships, with little concern about environmental consequences. This was particularly true after the bombing of Pearl Harbor, as the shipyards scrambled to rebuild the Pacific Fleet. Documents concerning operations during World War I and World War II show that the Tacoma shipyard was no exception to this general rule. Waste disposal systems were primitive and much of the waste simply went into the Hylebos. During World War II, the Navy installed catch basins and drainage lines to the Hylebos Waterway. See Volume V (National Archives Report and Maps); Volume XII ("North Ten Acres" real estate records). No precautions were taken to prevent transformers from leaking on to the piers, and materials from transformers were routinely dumped onto the ground or into the water. Hazardous substances were also released in other ways, such as through overspraying of paints, discarding of debris from construction areas, and the maintenance of equipment.

## **2. Navy Indexes of Ship Component Specifications from World War II Construction (Volume XII)**

We have obtained from the National Archives two indexes of specifications for Navy ship components prepared by the U.S. Bureau of Ships for the Navy during World War II (dated 1942 and 1944) (attached in Volume XII). Those indexes identify numerous components containing the hazardous substances that have been detected in the Mouth of the Hylebos Waterway. For example, those indexes identify the following components: antimony, slabs; barometers, mercurial; batteries; cables, electric, insulated; cadmium, ingots; carbon, tetrachloride; copper; cuprous oxide; diesel fuel oil; disinfectant, cresolic; disinfectant, germicide and fungicide; electrodes, copper-nickel alloy; felt, wool (described by the Navy in its PCB rulemaking comments as a particular problem) (see item 9 below, in this section); oil, transformer; paints (including anti-fouling, chlorinated, fire-retardant, and heat-resisting); phenolic-materials; pipe, lead; primer, zinc chromate; solder, lead; thermometers, mercurial; trichlorethylene; varnish, phenolic; xylene; and zinc (in various forms). The indexes also list equipment that contained, or distributed, hazardous substances and fluids, such as hydraulic equipment, paint sprayers, insecticide sprayers, and transformers.

**3. Historical Photographs and Real Estate Records of Operations at Site 56, Including the "Navy/Todd Dump" on the "North Ten Acres" of Site 57 (Volume XII)**

Photographs obtained from the archives at the Tacoma Public Library have been duplicated and enclosed in Volume XII, with descriptions. They primarily depict the Site 56 shipbuilding activities during World War II, and reveal the disposal of wastes directly to the Hylebos Waterway. The photographs have been divided into the following three groups: (a) Navy/Todd Shipbuilding During World War II and the Post-War Naval Station—Tacoma; (b) Ships Built by the U.S. Navy and Todd (1940-43); and (c) Extensive Contamination of the Hylebos Shoreline by the U.S. Navy and Todd During World War II, While Operating on the Occidental Property (the creation of the "Navy Todd Dump" on the "North Ten Acres" of Site 57). The historical photographs show the lack of waste control at the Mouth-area shipyard during the World War II operations.

The "North Ten Acres" of Site 57 were the location of very significant waste incineration and disposal on the Hylebos shoreline and into the waterway itself. According to the historical real estate records (all enclosed in Volume XII), Occidental's predecessor purchased the "North Ten Acres" from a Todd Shipyards entity in 1937. However, shortly thereafter (in 1941), the property was needed for the shipyard war effort. The property was leased for use by Todd and the United States Government. Todd and the Navy installed various facilities in the "North Ten Acres," including: a "scrap disposal yard," a waste incinerator, a vehicle maintenance building on the shoreline (including a 2000-gallon fuel tank), and a sewer system that included catch basins and drainage lines to the Hylebos.

The historical photographs in Volume XII show the creation of the "Navy/Todd Dump" on the shoreline of the Hylebos at Parcel 57's "North Ten Acres." Copies of some representative photographs taken on August 29, 1945, and February 20, 1946, show the creation of the "Navy/Todd Dump" in 1945. Near the waste incinerator on the shoreline, shipyard wastes from Site 56 were dumped and pushed into the waterway. The "Navy/Todd Dump" is depicted on an October 1945 map of the shipyard. See Volume V (National Archives Report, Map 3). Copies of two aerial photographs taken on April 27, 1944, and on January 1, 1946, show conditions "before" and "after" the creation of the "Navy/Todd Dump" on the Parcel 57 shoreline. This area was the disposal site for PCB-laden materials and other hazardous substances from Site 56's ship construction. The sampling of that shoreline area has confirmed the disposal of PCBs in that dump, as well as the presence of lead, PAHs, VOC residue, cadmium, copper, antimony, nickel, zinc, and other hazardous substances.

A fourth group of photographs shows the Zidell Dismantling operations on Site 56 during the mid-1970s, revealing extensive piles of scrap metal on the Hylebos shoreline. The scrap was obtained from the dismantling of Navy vessels, as well as other ships and equipment. Much of the dismantling (and releases of hazardous substances to the Hylebos) occurred immediately adjacent to the shoreline of Site 56. This caused chemicals (PCBs, PAHs, metals, etc. to be released to the Site 56 shoreline, and those chemicals have been detected in nearby intertidal and subtidal sampling.

#### **4. Newspaper Articles Regarding Site 56 (Volume XII)**

Some articles from the Tacoma Public Library describe the history of Site 56, and are included in Volume XII. Two articles in particular provide information regarding the shipbuilding that occurred during World War I (March 10, 1957, and June 27, 1969). The articles indicate that, during World War I, the shipyard employed 10,000 people. Between 1917 and 1921, twenty-six ships were constructed, including "three 10,000-ton scout cruisers, including the Omaha. . . ." The other two were the Milwaukee and Cincinnati.

The articles also identify the types and names of ships constructed during World War II. Between "1,500 and 2,000 men" were involved in building "five C-1 type cargo vessels." Two larger troop transport vessels were built—the Frederick Funston and the James O'Hara. Then, five tankers were constructed. "But the No. 1 product was to be the escort aircraft carriers—baby flattops. Sixty-two of the escort carriers were to be built in the next few years. In addition three destroyer tenders were constructed." It was estimated that 33,000 workers were employed in the shipyard during World War II.<sup>9</sup> Other vessels built at the shipyard are identified in the photographs discussed above (item 3; Volume XII).

The articles describe the storage and scrapping of more than thirty of the escort carriers (flattops) at Site 56 by the Navy in the 1950s. Following World War II, the Navy converted the Tacoma shipyard into a berthing station for deactivated and mothballed warships. In 1946, the Navy designated the site as the U.S. Naval Station, Tacoma. Twenty-eight ships were berthed at the station following the war, and approximately 1300 people worked there. The Navy also used the site to ship military cargo. During the Korean War, five the ships berthed at the Naval Station were reactivated. These activities took place on Sites 56, 59, 60, and 51.

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<sup>9</sup> One of the photographs enclosed in Volume XII verifies employment of 28,879 workers in August of 1943.



The Navy actively maintained ships berthed at the Naval Station, scraping, abrasive blasting and repainting of the ships' upper hulls to prevent corrosion. The ships were berthed along the outfitting and commissioning piers, at Parcels 56, 59 and 60, as well as along the peninsula at Parcel 51. Scaling and painting took place along these piers. These activities would have resulted in the discharge of paints, abrasive blasting slags, and other materials into and near the Hylebos Waterway. The routine maintenance of Navy ships also would have involved the discharge of wastes to the Hylebos as bilges were pumped, PCB-containing oils and greases were changed and dumped, cleaning solvents were discarded, and other wastes were generated and disposed.

As discussed in a section below (item 6) the Navy has acknowledged that it "may have" also dismantled some ships during this post-World War II period. According to the Navy's 104(e) responses to EPA included in Volume X, this activity took place in the area south of Pier #3 (on the Hylebos Waterway, adjacent to Sites 56 and 57; the pier is now called Pier #25 by the Port of Tacoma). As discussed below, these short of ship dismantling activities involved the release of large quantities of hazardous substances.

**5. Navy Ships Moored at Site 57 (at the former "PRI" dock).**

According to an undated Memorandum of Understanding between the U.S. Navy and Fletcher Oil Company (the long-term owner and operator of the former "PRI Northwest property" included within Site 57), the Navy moored ships at the "PRI" dock. The document is enclosed in Volume XII. Historical observations and aerial photographs indicate that the Navy moored its vessels there frequently and for many years, both during the Naval Station Tacoma era (1946 to 1960) and the Subsequent Reserve Center era (at Sites 59 and 60). Undoubtedly bilge dumping and other releases from the Navy ships contributed the PAHs and other compounds detected in that location.

**6. The 104(e) responses provided by the United States Navy, Todd Shipyards, the Port of Tacoma, and Zidell Dismantling (Volume XIII)**

(a) The United States Navy 104(e) response. The response contained remarkably little information regarding a facility that the United States evidently controlled during World War I, definitely controlled/operated during World War II, and continuously owned/operated for nearly twenty years until 1960. The Navy acknowledged that it "obtained control of production at the shipyard" in October of 1942, although the facts described in the Site 56 National Archives Report indicate

that operational control was assumed earlier (p. 7). The Navy indicated that "[t]he shipyard may have been used for dismantling and retrofitting [sic] of Liberty and Victory ships from about 1946 to 1948" (p. 7). "Based on aerial photos [the Navy] believe[d] this [ship dismantling] occurred in the area south of Pier 3" (p. 7)—that is the pier located on the Hylebos Waterway adjacent to Sites 56 and 57. During the period following World War II, "the facility provided berthing space for ships of the reserve fleet . . . [which] were deactivated, preserved, and stored for future use." (p. 7).

As indicated above (in item 1), the World War II shipyard and subsequent Naval Station Tacoma occupied most of the peninsula at the Mouth of the Hylebos, surrounding Site 57. Pier #3 stretched the length of Site 56 on the Hylebos. Other Navy piers were located on Sites 59 and 60 (the "Commissioning Pier") See Volume V. The Navy also operated an incinerator on the waterfront of Site 60 during the 1940s and 1950s. Id. It is likely that materials were released into the Waterway and along the shoreline near the incinerator, as was the case near the World War II incinerator located on the "North Ten Acres" of Site 57.

In the 1960s, the U.S. Navy and Marine Corps constructed a Reserve Training Center on a portion of Sites 59 and 60, which continues to operate today. The Reserve Center continues to use the old Commissioning Pier on Sites 59 and 60, and serves as the homeport for Navy vessels, which are maintained and repaired as necessary. These activities involve the use of paints, oils, fuels, solvents, batteries and PCB-laden transformers. Historical aerial photographs confirm that submarines were berthed there at times in the 1950s and 1960s. Until 1976, oily bilge water from the vessels was discharged directly into the Hylebos. Surface runoff from the Reserve Center is also discharged to the Hylebos via storm drains. And, problems associated with releases of oils and fluids from vehicle fleet maintenance have been documented in Ecology reports. In 1994, a failure of the underground storage tank system resulted in petroleum contamination on the property. In 1995, Ecology inspectors also observed a five-foot high pile of aggregate material containing elevated levels of arsenic, copper, lead and zinc near the Hylebos shoreline.

The Navy 104(e) response contained information regarding various oil spills and the generation of hazardous substances (including tetrachloroethylene) at the Naval and Marine Corps Reserve Center located on Sites 59 and 60 (pp. 11-13). It contained information regarding the oily wastewaters discharged to the Hylebos generated by the vessels homeported at Site 60 (p. C-6). And, it indicated that, as of 1982, there was a PCB transformer at the Reserve Center, "adjacent to the Hylebos Waterway" (p. C-6). An attachment (Appendix D) to the response described the floating ship repair facility stationed at the Reserve Center, which included "a

machine shop, valve and pump shop, welding shop, electric shop, carpentry shop, sheetmetal and pipe shop, and sail loft" (p. 11). The valve and pump shop contained a sand blaster, and equipment used to repair heat exchangers (p. D-5). The floating facility also repaired engines, as well as electrical and hydraulic systems (p. D-11).

(b) The Todd Shipyards 104(e) response. This response also contained remarkably little information regarding the facility that Todd owned and operated for over thirty years. Excerpts from a published "book [called Every Kind of Shipwork] that contains a chronology of Todd's history through 1981" revealed some significant information. First, the book described the development of the shipyard from 1916 through World War I, and the types of ships constructed. Second, it is evident that the United States controlled World War I operations at the shipyard, in much the same manner it did during World War II:

Before Todd Shipyards Corporation was six months old [Todd] found [a new] location: a tract of undeveloped shoreline on Commencement Bay at Tacoma, near the head of the Sound. . . . A 12,000-ton floating drydock was already under construction at Seattle, to be towed to Tacoma when the new yard was ready to receive it. That the whole plan was still a relatively modest one at the start of 1917 is made clear by Todd's own statement two years later that "a small construction business was contemplated as a feeder for a repair business." In a few weeks things would take a very different turn.

The most important factor in altering and accelerating Todd's plans, apart from the declaration of war itself, was the establishment on April 17, 1917, of the Emergency Fleet Corporation to serve as the ship construction and acquisition arm of the United States Shipping Board. Its broad duties, under the Shipping Act of 1916 as amplified by further legislation of June, 1917, also included the acquisition and if necessary the requisition and construction of shipyards. Under these extraordinary powers, on August 3, it requisitioned all steel merchant vessels over 2,500 tons under construction or on order anywhere in the United States. . . .

. . . Apparently it was decided in anticipation of the government's action to lay down at Seattle none of the British ships or the first ten "Cascades"—all 7,500-tonners henceforth known as E.F.C. Design No. 1014—[and instead build them at Tacoma].

These developments, reinforced by the [United States'] Emergency Fleet Corporation's insistence that the new Commencement Bay yard be expanded and devoted entirely (naval work excepted) to the construction of standard freighters, so altered the original scale of planning at Tacoma that the local preferred stockholders took alarm and insisted that the company buy them out. This was done, followed by enormous additional outlays to complete a major shipbuilding plant which, less than eight months after the fleet requisition, launched its Hull No. 1, the freighter Chebaulip. . . .

As was the case with the Emergency Fleet program generally, the unexpected termination of the war left Tacoma's contracts far less than half completed. Yet its tally of deliveries before November 11, 1918, measured up favorably to those of other yards. . . . Of 34 ships assigned to it (12 of which were subsequently cancelled), plus the five for Britain and the requisitioned Masuda, it had launched seven and delivered six before the Armistice. All of the remainder were completed by July, 1920, except that Todd elected to finish two of the cancelled hulls for its own account. [This totals 30 ships built at Tacoma between 1917 and 1920.]

(pp. 39-42). The book went on to describe the completion of three combat cruisers (the Omaha, the Milwaukee, and the Cincinnati) for the United States in the early 1920s, and the construction of passenger liners until 1924. (pp. 58, 64, 66). The shipyard was mothballed in 1925, and stood "idle until February, 1933, when, to save taxes as the Depression deepened, the decaying structures which had launched an emergency fleet were razed—all except one small building which would stand watch on Todd's Commencement Bay tidelands until it came time to build a new shipyard [six years later in 1939]" (p. 66).

(c) The Port of Tacoma 104(e) response. The Port of Tacoma purchased the shipyard from the U.S. government in 1960 and has since leased portions of the property to several ship building and dismantling businesses, including Zidell Dismantling, Tacoma Boatbuilding, and AK-WA Shipbuilding. The response identified some of the tenants that have used Site 56 since 1960. It indicated that:

Oil from the transformers containing PCB's has been transported and disposed as part of routine port maintenance activities.  
Manifests detailing the individual transport and disposal

quantities and concentrations are located in facilities/environmental files at the port.

(response to item #9). We have not obtained access to those manifests. However, a Notification of Dangerous Waste Activities were submitted to EPA by the Port in 1989 (copy enclosed), described the disposal of PCB contaminated materials resulting from the cleanup of external transformer surfaces and oils apparently released from transformers at Site 56. As described in the enclosed Site 56 National Archives Report (see Volume II), and as discussed below in the section regarding the Port's Site 56 stormwater catch basin studies (item 10; Volume XV), transformers historically were located on the piers immediately adjacent to (and over) the Hylebos.

(d) The Zidell Dismantling 104(e) response. Between 1960 and 1984, Zidell Dismantling leased the former naval shipyard and operated it as a ship dismantling facility (from 1960 to the mid-1970s), and as a shipbuilding and repair facility (from the mid-1970s until 1984). Zidell dismantled large Navy ships, moored at outfitting Pier #3 on the Hylebos. These ship dismantling activities caused substantial hazardous substance releases to the Waterway. The 104(e) response acknowledged that the ships dismantled by Zidell could have contained transformers and PCBs (pp. 5-6). The response discussed the removal of waste oils and sludges from vessels, and related spills (pp. 5-6, 8-9). According to correspondence from the City of Tacoma to WDOE, which referred to waste oil transferred by Zidell to Site 47 on the Hylebos in Segment 4:

The waste oil was pumped from an old aircraft carrier vessel that was to be scrapped by Zidell [sic] Dismantling of Tacoma. This waste oil was to be used for furnace fuel but it contained fire retardant so it would not burn.

March 28, 1990, memorandum from Ron Robinson of the Washington Department of Ecology ("Ecology") to Urban Bay Action Team (enclosed in Volume XIV). This information provides strong indication that Zidell handled waste oils containing PCBs at Site 56 and that such PCB-laden oils from a Navy aircraft carrier were transferred to Site 47 in Segment 4. Hylebos sediments adjacent to that site primarily contain PCBs.

#### **7. Zidell Dismantling documents obtained from Ecology and EPA files (Volume XIV)**

During dismantling operations in the 1960s and early 1970s, valuable materials were salvaged, but other materials (including materials acknowledged by the Navy to

contain PCBs, such as fluids, insulation, coatings, plastics and other non-metallic materials) (see item 9 below and Volume XV) were often simply dumped in the water or onto the tidelands. Bilge wastes containing PCB-laden oils and greases were typically released into the waterway, along with any residual oils and fuels in the ship not salvaged prior to dismantling. Such activities are confirmed by contemporaneous reports from Ecology inspections. See Volume XIV. These documents reflect ongoing problems with oil spills to the Hylebos, and poor practices causing contamination. The waste disposal and oil spills occurred immediately adjacent to Sites 56 and 57, causing releases of PCBs, PAHs, metals, phalates, and other chemicals immediately offshore from Site 57.

#### **8. AK-WA Shipyards documents obtained from Ecology and EPA files (Volume XIV)**

From 1986 to 1997, AK-WA Shipbuilding operated a ship repair and steel fabrication facility located on a portion of Site 56. The facility included a main building (housing administrative offices and machine, paint, sheet metal, electrical, pipe, steel, carpenter, and rigger shops), a wooden dry dock, and a mooring pier. Wastes typically encountered in this sort of operation include spent abrasive blasting material (copper slag in this case), hydroblasting wastewater (which would likely contain metals), paint and solvents. Stormwater and hydroblasting runoff flowed into the Hylebos. Again, releases of hazardous substances are confirmed by Ecology reports.

These documents reflect ongoing problems causing releases to the Hylebos, such as oil spills, blowing sandblasting grit, NPDES permit violations for various parameters (Oil and Grease, Total Suspended Solids, Total Recoverable Copper, and Total Recoverable Zinc), and diesel fuel. The documents indicate the use of a variety of solvents in AK-WA's work, and concerns expressed by Ecology inspectors regarding handling of solvents.

A 1993 report entitled "Engineering Report for Recycling of Hydroblasting Effluent," indicated that between 1986 and 1992, "wastewater from the hydroblasting operation [at AK-WA] was discharged directly to the Hylebos Waterway without treatment" (p. 6). "The primary contaminants in the untreated effluent [were] heavy metals (up to 41,000 ug/1 Total Recoverable Copper and 13,000 ug/1 Total Recoverable Zinc)" (p. 6). Each ship that was hydroblasted created about 7,000 gallons of wastewater (p.6). In August of 1992, AK-WA installed a treatment plant to treat the hydroblasting effluent before discharge to the City of Tacoma sanitary sewer system (p. 6). However, in January of 1994, "AK-WA reported illegal discharges. . .

of approximately 2,430 gallons of [untreated] hydroblasting water" (January 28, 1994 Inspection Report, p. 2).

**9. Navy Reports Regarding the Presence of PCBs Throughout Many Materials and Fluids Used in Navy Ships (Volume XV)**

(a) United States Navy Comments dated August 7, 1991, on the EPA's Advance Notice of Proposed Rulemaking on PCBs (enclosed in Volume XV). The Navy's comments indicated, inter alia:

From the time of passage of [TSCA] until 1989, the Navy believed that PCBs were to be found primarily in electrical transformers, capacitors, and in hydraulic fluid. . . . In April 1989, during submarine inactivation work, the Navy discovered that a type of wool felt insulating material widely used on Naval vessels contained PCBs in high concentrations (typically 15 percent to 30 percent by weight) . . . .

Subsequent to the Navy's April 1989 discovery, extensive shipboard testing has been conducted to determine the extent of PCB use on Naval vessels. In addition to the previously known uses, this testing has shown that many common materials contain PCBs in concentrations above 50 parts per million (ppm). These materials, which in many cases were off-the-shelf, commercial products at the time of purchase, include plastics, paints, small rubber parts, adhesive tape, and insulating materials, such as the insulation in electrical cabling. Additionally, because of the widespread use of PCBs in a variety of applications, many equipment and ship metallic surfaces remain contaminated with PCBs.

As an example of the widespread use of PCBs, Navy surveys since October 1990 on 57 older surface ships and craft have shown that 56 of the vessels contain materials with PCB concentrations greater than 50 ppm, or surface contamination greater than 10 [ppm].

(p. 3). The comments went on to discuss the widespread use of the PCB-contaminated felt in Navy vessels:

The PCB wool felt previously installed in ventilation duct gaskets and other applications poses a considerable dilemma. There is a very large amount of this material on board Naval vessels (on the order of 10,000 gaskets on an aircraft carrier).

(p. 4). Testing has revealed that materials in contact with the PCB felt also become contaminated:

When older vessels are dismantled for purposes of recycling the hull, PCB-containing wool felt is removed and disposed of as PCB waste. The remaining steel hull, however, is contaminated with residual PCBs from contact with the wool felt. The PCB contamination levels found on hull sections range up to 20,000 ug/100cm<sup>2</sup> in spots, with much lower levels over most of the hull.

(p. 10.)<sup>10</sup> Obviously, the comments described the disposal of felt and the decontamination of hulls (and scrap metal), only as implemented since 1989, when the Navy first discovered the PCB contamination. The extensive dismantling of ships at Site 56, first by the Navy and then by Zidell, occurred long before the discovery of ubiquitous PCB contamination in Navy vessels. Given the photographic and documented evidence of waste disposal practices by the Navy and by Zidell, such dismantling activities must have released very significant volumes of PCBs and PCB-impregnated wastes to the Hylebos Waterway sediments.

The Navy comments also went on to discuss other sources of PCB contamination on ships:

One example is electrical cabling which contains PCBs at fairly low concentrations in the solid plastic insulating material around the wires. The PCB concentration in this electrical cabling is normally less than 500 ppm taking the plastic insulating material

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<sup>10</sup> The Navy comments demonstrated the enormity of PCB contamination encountered in dismantling ships. The comments indicated that "during the dismantlement of the ex-USS SCAMP at Puget Sound Naval Shipyard [in Bremerton, Washington], PCB decontamination of hull steel to a level of 10 ug/100cm<sup>2</sup>, in accordance with EPA Region X guidance, resulted in several thousand worker-days of contact with PCBs and volatile solvents." (p. 11). The PCB contamination was so widespread in the vessel that the decontamination effort "generated 174, 55-gallon drums of PCB/hazardous waste. . ." (Id.). In submitting these comments to EPA, the Navy evidently was holding out this situation as typical of the Navy fleet as a whole.



as the "whole," and less than 50 ppm taking the cable as the "whole."

(p. 6). As might be expected by the qualification that the cabling "normally" does not exceed 500 ppm, the comments acknowledged that levels greater than 500 ppm had been detected (pp. 6-7).

The comments only briefly expanded upon the fact that PCBs have been detected in paints used by the Navy. Such contamination was described in hull paints (p. 11) and in "mine cable coated with a solid anti-fouling compound containing both PCBs and mercury" (p. 19). The presence of PCBs in anti-fouling paints particularly implicates the hull maintenance work performed at the post-war Naval Station and by AK-WA Shipbuilding—the removal of hull paints undoubtedly contaminated the Hylebos Waterway sediments with PCBs and metals.

The testing results described in the Navy comments are corroborated by information contained in a reported legal case involving PCB contamination in an aircraft carrier originally commissioned in 1943. USS CABOT/DEDALO Museum Foundation, et al. v. United States Customs Service, et al., Civil Action No. 94-2277, 1995 U.S. Dist. Lexis 4068; 41 ERC (BNA) 1020 (E.D. La. 1995) (copy enclosed in Volume XV). In testing of various components of the ship, "most of the samples tested by the EPA contained PCBs far above 50 ppm—one of the highest levels being 122,000 ppm." Id. at 4.<sup>11</sup> Those samples included electrical cable components "(i.e., paint, paper, plastic, black material around copper wire, copper wire casing, black outer covering (casing), grey outer covering, gummy materials, plastic wrap, etc.)." Id. Paint samples from electrical cables contained PCBs as high as 605 ppm. Id. at 7. An oil spill on a floor was analyzed to have a PCB content of 275 ppm. Id. at 5.

(b) United States Navy Correspondence and "Compliance Plan Respecting PCBs Aboard Naval Vessels" dated April 1, 1991 (enclosed in Volume XV). This Navy correspondence and PCB Compliance Plan indicates that the PCB-impregnated wool felt discussed above was used in a number of applications, including as acoustical dampening material in submarines, gasket materials in the joints of ventilation ducts, insulating material between dissimilar metals "on all ships," and as machinery mount insulation (Compliance Plan, p. 2). The Navy's concern with its PCB-impregnated wool felt was not limited to the disposal of the felt itself. In the Compliance Plan, the Navy states that:

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<sup>11</sup> The page numbers cited here coincide with the page numbers on the enclosed printout, rather than the "Lexis page numbers."

When felt is removed from ventilation duct work or other sites, the adjacent area formerly in contact with it contains residual PCBs from the felt which itself contains PCBs at a concentration greater than 50 ppm.

Id. at p. 3.

In addition to the contamination problem caused by PCB-impregnated wool felt, the Navy's acute concern with pending PCB regulations also had its genesis in the large amount of PCB-containing electrical cabling found aboard its ships. In 1990, the Navy "discovered that, in many instances, the jackets insulating wire cables on Navy vessels contain PCBs in concentrations greater than 50 ppm" (Compliance Plan, p. 3).

(c) United States Navy Comments dated April 17, 1995, on the Proposed Rule for Disposal of PCBs (enclosed in Volume XV). This document contains additional portions of the Navy comments. It is noteworthy that the Navy filed more pages of comments than any other entity to the proposed rule on PCB disposal at issue. The Navy's 919 page submission (the first 29 pages of which are in this document) dwarfed other submissions, and concluded that "the proposed rule will have significant impacts on Navy vessels, facilities and operations . . .," and that "the comprehensive controls proposed by EPA will impact nearly every shipboard maintenance action and add significant costs." These Navy concerns about PCBs arose after decades of Navy ship construction, maintenance, and dismantling in the Hylebos Mouth area.

#### **10. EPA Guidelines Regarding Hazardous Substances Released by Shipyards (Volume XV)**

EPA's December 1979 "Development Document for Proposed Effluent Limitations Guidelines and Standards for the Shipbuilding and Repair Point Source Category" provides general information regarding the types of contamination, discharges, and wastes generated by shipbuilding and repair operations (enclosed in Volume XV). These include spray paints and spent paints removed from hulls (containing "compounds of copper, zinc, chromium, tin and lead, as well as organotin compounds") (pp. 1, 26-29, 48-49), toxics in antifouling paints (pp. 26-31, 49), solid wastes (such as industrial scrap, insulation, welding rods, etc.) (pp. 5, 51), oil/grease/fuel spills (pp. 6, 50), paint and solvent spills (pp. 6, 49), abrasive blasting debris (pp. 6, 22-27, 48-49), tank and bilge cleaning wastes (pp. 22, 48, 51), and ship wastewater discharges (pp. 41-48). This report was prepared ten years before the

Navy discovered extensive PCB contamination in its vessels and their components, as discussed above in item 9.<sup>12</sup>

**11. PCB and Metals Detected at Site 56, in the Stormwater Sewers Discharging to the Hylebos Waterway (Volume XV)**

Volume XV contains a compilation of materials regarding PCBs and metals actually detected at Site 56. These include data reports, maps, and photographs showing the transformer stations from which PCBs likely were released. As discussed above in item 8, PCBs also were present in the ship materials used during ship construction and in the ship components demolished at Site 56, immediately adjacent to Site 57.

The reports generated during the sampling of the stormwater catch basins at Site 56 provide data regarding the contamination resulting from flows discharging to the Hylebos. Contaminants detected included PCBs, lead, arsenic, mercury, copper, and zinc. See Volume XV.

Volume XV contains a diagram of the locations on Site 56 where PCBs have been detected in the stormwater sewer system, the intertidal area, and subtidal sediments. The diagram demonstrates that elevated concentrations of PCBs have been found in the sewer catch basins on Site 56. Those catch basins and sewer lines drain directly to the Hylebos Waterway. When the Hylebos Cleanup Committee sampled for PCBs in the Site 56 intertidal area at one of the sewer outfalls, the testing revealed 24,000 ppb PCBs. It is notable that this 24,000 ppb figure is a definite, unqualified concentration of PCBs, rather than a qualified "J" value or "U" value of dubious significance.

**12. U.S. Navy/Ship Dismantling—Environmental Problems Reported by The Baltimore Sun (Sites that Looked Like One Of "Dante's Levels of Hell") (Volume XV)**

In December of 1997, the Baltimore Sun newspaper published a series of articles regarding the environmental, health, and safety problems associated with the dismantling of U.S. Navy ships. The complete series is compiled in Volume XV (as

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<sup>12</sup> A reference document cited in the Draft Settlement Report (Ref. ID 122) is an EPA "Profile of the Shipbuilding and Repair Industry" (November 1997). It discussed many of the chemicals released by such operations (particularly VOCs—see pages 23 and 47) but did not address the PCB problems discovered by the Navy.

printed from the Sun's website, and in a reprint; citations below are to the website print-outs) (see the pictures in the reprint). Each article focused upon a different aspect of those problems:

- "The Shipbreakers: Scrapping ships, sacrificing men" focused upon ship salvage operations, such as those that occurred at Site 56 ("As the Navy sells off obsolete warships at the end of the Cold War, a little-known industry has grown in America's depressed ports. And where the shipbreaking industry goes, pollution and injured workers are left in its wake.") The article recounted some specific examples of the many hazardous substances related during ship dismantling: (a) PCBs ("PCBs . . . are in everything from electrical insulation to ventilation gaskets to fluorescent lights.") (p. 5 of 12) (this echoes the Navy's own PCB rulemaking admissions to EPA, discussed above as item 8); (b) lead ("A scrapyards along the Northeast Cape Fear River in Wilmington, N.C., was contaminated by asbestos, oil and lead. 'That site looked like one of Dante's levels of hell,' says David Heeter, a North Carolina assistant attorney general.") (p. 2 of 12) (emphasis provided) ("Lead-based paint covers the hull plates.") (p. 5 of 12); and (c) chromates ("Toxic chromates slosh around in ballast tanks.") (p. 5 of 12).
- "The Scrapping" article also recounted the Navy's failure to ensure compliance with environmental laws in its arrangements for disposal of its ships: "The Defense Department has repeatedly sent ships to scrappers who have records of bankruptcies, fraud, payoffs to government inspectors, and environmental and safety violations. The Navy and Defense Department make no serious effort to oversee the scrapping, even though the Navy retains ownership of the vessels. Until recently, only one inspector with little training and experience kept watch on scrapping operations for the entire country." (p. 3 of 12).
- "The Curious Captains of a Reckless Industry," a follow-up article, expanded upon the Navy's lack of care: "The negligence at the scrapyards has been abetted by the Navy's and Defense Department's lack of vigilance. There is virtually no meaningful monitoring of the shipbreaking industry. Prosecutors and regulators from a disjointed network of agencies, sometimes have stumbled upon violations at individual scrapyards, but the Defense Department agency that administers the scrapping program has done little to address its failings." (p. 2 of 12).

- The "Curious Captains" article also contains some revealing information about post-World War II and 1970s ship dismantling (the time frames for such activities in the Mouth of the Hylebos Waterway): "Right after World War II, shipyards around the country . . . scrapped a huge number of surplus ships. In the 1970's, [an opportunistic shipbreaker] realized that another wave of ships . . . was reaching retirement age." (p. 6 of 12). Indeed, the Navy has acknowledged that it "may have" scrapped ships between 1946 and 1960, at the Naval Station Tacoma at Site 56. However, it is curious that, having expressed some uncertainty about those events, the Navy indicated very precisely that such dismantling would have occurred at a particular pier adjacent to Sites 56 and 57. Navy 104(e) response to EPA (November 1989), p. 7 (Volume X). It has been established that the Navy arranged for the disposal of its obsolete ships at that same Site 56 pier, via Zidell Dismantling in the 1960s and 1970s.
- An article entitled "A Third World Dump for America's Ships?" focused upon the Navy's plan to export ships for dismantling in other countries: "With its American scrapping program entangled in environmental and worker safety problems, criminal charges, bankruptcies and lawsuits, the Navy has decided to drop its old policy. To escape the turmoil in its domestic program, it could simply export its obsolete ships, laden with asbestos, PCBs, lead, toxic sludge and other hazards to South Asia." (p. 2 of 16). The article explained that the Navy plan was temporarily halted by the EPA "PCB export ban," but that a compromise was reached: "Overseas sales of U.S. warships became possible [during the summer of 1997] after [EPA] gave the Navy an exemption from rules banning the export of ships containing PCBs. . . . They were widely used in electric insulators until the 1970s. . . . The export agreement requires the Navy to remove the most hazardous PCBs, those in liquid form. Most others, though used in thousands of ship parts, can remain." (p. 11 of 16).
- A subsequent article, "Broadsides Fired at Navy's Ship-scrapping Program," indicated that on December 18, 1997, "[t]he Navy's troubled ship-scrapping program and its plan to sell warships abroad came under attack. . . from members of Congress and several environmental organizations." (p. 1 of 4). The article described the intention of Representative Gilchrest of Maryland to hold hearings in the U.S. House Coast Guard and Maritime Transportation Subcommittee, to "look into the environmental, health and safety problems linked to the transient shipbreaking industry." (p. 1 of 4).

### **13. Congressional Hearings Regarding Navy Ship Dismantling Problems (Volume XV)**

In 1998, Congress did hold hearings regarding the Navy's troubled ship dismantling program. A summary of the hearings from the House of Representatives website is included in Volume XV. The summary described the Navy's scrapping procedures ("Typically, a ship scrapping company buys the rights to scrap the government ship. . .," and thus the Navy retains ownership during its disposal.). The summary also summarized events involving the EPA "PCB export ban" and specific instances of environmental problems.

### **14. Interagency Panel on Ship Scrapping (Volume XV)**

EPA and the Department of Defense formed an "interagency panel on ship scrapping," as a result of the PCB rulemaking proceedings, the EPA "PCB export ban," and the environmental problems caused by ship dismantling. According to the March 13, 1998, BNA Environment Reporter (excerpt attached in Volume XII, the panel held public hearings regarding "the U.S. military's responsibility for worker safety and environmental protection. . . ." The panel, created in December of 1997, focused upon the PCB problem in Navy ships, and was preparing "a report . . . on military and contractor practices at shipyards where vessels are dismantled and sold for scrap." A summary of the panel's activities, obtained from a pertinent website, is attached in Volume XV.

### **15. Other Navy Facilities Where PCBs, PAHs, Metals and Other Chemicals Were Released--Puget Sound's Manchester Annex Navy Landfill (Volume XVI)**

The Manchester Annex Superfund Site was used by the Puget Sound Naval Station at Bremerton for shipyard waste disposal during World War II, and shortly thereafter. The "Landfill Area" is one distinct component of that site. The Site's Record of Decision ("ROD") is attached in Volume XVI. According to the ROD (p. 3), "the majority of the landfilling appears to have occurred between 1946 and 1955. . . . The bulk of the waste included building demolition debris and burnable garbage from the [shipyard], along with scrap metals, steel, old submarine nets, and other debris." As such, the Manchester Annex Site is remarkably similar (in content, time frame, and location) to the Navy/Todd Dump created by the Site 56 shipyard on the "North Ten Acres" of the Site 57 shoreline at the end of World War II. The data from the Manchester Annex Landfill Area also are remarkably similar to the Navy/Todd Dump in the chemicals that have been detected.

The Manchester Annex ROD's data summary indicates that elevated concentrations of PCBs, numerous metals (e.g., antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc, VOC/SVOCs, and PAHs) have been detected in the Landfill area. ROD, Table 2, pp. 49-50. PCBs were detected in 19 of 27 samples, and the maximum concentration was 8,900 ppb. Id. "Roughly half of the landfill soil samples analyzed by [TCLP] exceeded lead toxicity criteria." Id. at p. 9. That landfill extends into the intertidal zone of Puget Sound's Clam Bay. "Erosion of landfill waste materials in the intertidal area. . . , due to tidal action, represents a continuing source of contaminants, primarily metals, PCBs, and dioxins/furans, to the marine environment." Id. The data also indicate exceedances of pesticides (DDD, DDE, and DDT), demonstrating the Navy's use of those substances. However, as indicated in Section III.B.3 of these comments, the analytical chemists do not believe that pesticides actually have been detected in the Mouth area of the Hylebos Waterway.

**16. Other Navy Facilities Where PCBs, PAHs, Metals and Other Chemicals Were Released—Norfolk Naval Shipyard (Volume XVI)**

In addition to the sites described by The Baltimore Sun articles, other news reports have highlighted the PCB problems encountered at other Naval shipyards. For example, The Virginian-Pilot (Norfolk) reported in an article entitled "EPA: Naval Yard One of Nation's Most Toxic Sites" (attached in Volume XVI) that the Norfolk Naval Shipyard was proposed for Superfund listing. The chemicals released from the shipyard include PCBs, VOCs, pesticides, and metals. Contaminated areas include "[s]everal landfills. . . including a sanitary landfill used for salvage waste, blasting grit, ash, residential trash, and sludge from the industrial waste water treatment plant. . . ." The article also described "a solvent disposal area." Another landfill "was used for disposal of wastes generated from drydock operations, including blasting grit, paint residues, solvents, and other residues." The article indicated that the Norfolk Naval Shipyard would be the third Navy facility (and fifth military base) in the area to be listed as a Superfund site.

**17. Department of Ecology Complaints About Recent Navy Fuel and Oil Spills in Puget Sound (Volume XVI)**

During the past several years, the Washington Department of Ecology has been very vocal in its complaints about Navy fuel and oil spills. In August of 1996, Ecology issued a news release (attached in Volume XVI) highlighting "an ongoing problem with fuel spills from naval vessels in Puget Sound." While the complaints seemed to focus upon the Bremerton naval station, the Ecology concerns were

expressed about general Navy operations. "[Ecology's] concern is that naval vessels have significant spill on a regular basis and don't show any signs of improvement." Golob's Oil Pollution Bulletin (September 9, 1996) (also included in Volume XVI). A Tacoma News Tribune article also is attached in Volume XVI, expanding upon the numerous pertinent spill incidents and resulting penalties. In April of 1997, Ecology issued a report entitled "Oil Spills in Washington State: A Historical Analysis" (attached in Volume XVI) that again recounted frequent, ongoing problems with Navy vessels and facilities.

Although the Hylebos is not specifically mentioned in these Ecology materials, this information is relevant to the Waterway in that it demonstrates the Navy to be a chronic source of fuel and oil releases to the Puget Sound marine environment, in an era of environmental regulation and agency scrutiny. The Navy has operated in the Hylebos from approximately 1917 to the present, and certainly caused nearly continuous discharges during the years when naval ships occupied almost the entire Mouth area. That time period (1941 to 1960) pre-dated the enactment and enforcement of most environmental laws.

#### **V. SITE 56 (AND RELATED ACTIVITIES ASSOCIATED WITH NEARLY ALL OTHER MOUTH SITES)**

**The Hylebos Sampling Data Demonstrate That the Ship Building, Maintenance, and Dismantling Activities That Occurred in the Hylebos Mouth Area (in Connection With Nearly All Parcels) Were the Primary, If Not Exclusive, Sources of the PCBs, PAHs, And Other Compounds Erroneously Attributed To Site 57 (the "Occidental" Site ) In The Draft Settlement Report's Allocation Of Alleged NRD.**

#### **A. PCBs In The Mouth Area Of The Hylebos**

An analysis of all of the Hylebos chemical data from the Mouth of the Hylebos leads to the conclusion that the PCBs in the Mouth area were not associated with the historical Occidental operations at Site 57. As summarized in the attached Figure 4, the PCB "footprint" developed by incorporating all available sampling data in the Hylebos Waterway clearly reveals that Site 57 (other than the "North Ten Acres") is not a significant source area for PCBs. Elevated PCB concentrations detected in certain areas of the Mouth are primarily located at or immediately adjacent to Site 56, and are clearly attributable to historical Site 56 operations and releases (and by related operations and similar releases from other Mouth area sites). These conclusions are demonstrated by the following data: (a) Parcel 56 intertidal PCBs can be traced to the Parcel 56 uplands via PCBs detected in the storm sewer system discharging to that



intertidal area; (b) there is a correlation between detections of PCBs and trichlorobenzene, linking intertidal and subtidal chemistry to Site 56 transformer releases; (c) the "Navy/Todd Dump" located on the "North Ten Acres" of Parcel 57 contained PCBs that contributed to intertidal and subtidal PCBs; (d) PCB "fingerprinting" analyses demonstrate that Site 56, and the "Navy/Todd Dump" resulting from Site 56 waste disposal, were the primary sources of the Aroclor 1260 PCBs in the Mouth sediments, as well as in the embankment areas; (e) the Site 57 facility outfall is located in the center of the Site 57 shoreline, where PCBs were not detected in the intertidal or embankment areas; and (f) there is no evidence of any PCB releases from the historical Occidental operations on Site 57.

1. PCBs in the Site 56 Storm Sewer Discharging to the Hylebos Intertidal Area. According to historical site data, PCBs were detected in the Site 56 storm sewers in 1994-95 after the sewer system was cleaned twice. See Volume XV. The sampling was performed to assess the cleaning process. While pre-cleaning data (if any) have not been located, the post-cleaning data showed PCB concentrations as high as 2,050 ppb remained in the sewers even after the second cleaning. The storm sewers discharge to the Site 56 intertidal area via several outfalls. The upland storm sewer catch basins drain the transformer bank area of Site 56, and feed the sewer line that empties onto the shoreline sampling area where PCBs were detected by the HCC at 24,000 ppb. The data, maps, diagrams and photographs included in Volume XV demonstrate that Site 56 is a major contributor of PCBs to the Mouth area of the Hylebos Waterway.

2. Correlations Between the PCB and Trichlorobenzene Distributions in the Mouth Area. PCBs and 1,2,4-trichlorobenzene ("TCB") both have historically been common constituents of transformer fluids. The presence of TCB should generally correlate with the presence of PCBs, if transformer releases occurred. The highest TCB concentration in the Hylebos was detected at sampling station 5203I, along Site 56. Comparison of the locations and concentrations of PCBs and TCB detected in the Mouth intertidal area show elevated concentrations of PCBs at the same locations as the TCB. This condition was confirmed by the data from sampling station 5203I.

Given the data correlation in the Mouth area, sampling station 5203I on the Site 56 shoreline appears to be the closest to the transformer source, since it contains the highest concentrations of both TCB and PCBs. It appears that these compounds migrated into the Waterway in proximity to Site 56, impacting other sediments at concentrations diminishing with distance from the Site 56 shoreline. For example, sediment sampling location 5108 shows the presence of both TCB (63 ppb) and PCBs (530 ppb), indicating that the source was a transformer fluid release. Based upon the

location of station 58 with respect to the station 5203 intertidal area and the relative chemical concentrations between the two samples, it is reasonable to conclude that the transformer fluid (and PCBs) at station 5108 migrated from Site 56. The data thus reveal that discharges from Site 56 contributed PCBs to the intertidal and subtidal sediments in the Mouth area of the Hylebos.

The correlations of PCB and TCB data, and the conclusions described above, are consistent with the factual history described in detail above. That is, PCB transformers were located on the pier along the Site 56 shoreline, immediately above the 5203I sampling area. The presence of PCBs in those particular shoreline transformers was confirmed when the transformers were removed by the Port in 1989. Volume XIII (Port 104(e) response). Those PCB transformers were on the Hylebos pier for nearly 50 years. The data demonstrate that those transformers and other Site 56 activities contributed PCBs to the Mouth area of the Hylebos.

3. The "Navy/Todd Dump" Data Demonstrate PCB Disposal from World War II Shipyard Activities. Besides the identified PCB "hot spots" located along the Site 56 shoreline, as generally depicted on Figure 4 and discussed above, the only area of locally elevated PCB concentrations at Site 57 coincides precisely with the location of the former Navy/Todd Dump. Dr. Alan F. Weston evaluated the pertinent historical PCB data (gathered by the HCC, the Port, and Occidental in the past years) and undertook "fingerprinting" analyses using the results from gas chromatography with an electron capture detector ("GC/ECD"). See Volume II ("Weston Affidavit"). He then performed similar analyses on new embankment samples gathered in 1998 by Occidental from the areas where PCBs were detected previously, but used more precise technology, high resolution gas chromatography/high resolution mass spectrometry ("HRGC/HRMS"). Weston Affidavit, ¶¶ 7-9. This two-step assessment confirmed the presence of four very different and distinct patterns of PCBs in the shoreline and subtidal areas at the Mouth of the Waterway. *Id.* at ¶5. Three of the patterns are located in one or two of the three shoreline disposal areas on Site 57 (the C Landfill, the N Landfill, and the Navy/Todd Dump). However, those three patterns do not appear in the Waterway sediments. *Id.* at ¶¶ 5, 15, 16, 20, 21. Most significantly, "the Navy/Todd Dump contains the same Aroclor 1260 PCB pattern [the fourth pattern] found in the remainder of the Site 57 embankment, the Site 56 embankment, the former PRI property embankment (the southern end of Site 57), and all of the proximate sediments in the Mouth of the Waterway." *Id.* at ¶¶ 5, 12-14, 18-19. Based upon the pervasive presence of the distinct Aroclor 1260 pattern, and the locations of the highest PCB concentrations, Dr. Weston "conclude[d] that [Site 56] and the Navy/Todd Dump were the primary sources of the Aroclor 1260 PCBs in

the Mouth intertidal and subtidal sediments, as well as in the embankment areas." Id. at ¶ 23.

Dr. Weston's conclusions become manifest when one considers the other data and the compelling evidence regarding PCBs discussed above. That evidence includes: (a) the Navy's admissions that PCBs are found throughout Navy ships in various materials at very high concentrations; (b) indexes of World War II Navy ship construction components listing the same components that the Navy's PCB rulemaking comments admitted contained PCBs; (c) extensive ship construction, berthing, maintenance, repair, and dismantling occurred for nearly 85 years throughout the Mouth area at nearly all sites, releasing hazardous substances (including oils and wastes undoubtedly containing PCBs); (d) evidence gathered by the Baltimore Sun revealing that PCBs are a very significant problem for the Navy, causing contamination at numerous other Navy ship dismantling sites, resulting in the imposition of an EPA-imposed PCB ban on the export of surplus Navy ships, and provoking a Congressional inquiry into the Navy's environmental legacy; (e) the Navy/Todd Dump and the Site 56 intertidal area contain the highest PCB concentrations in the Mouth; and (f) PCBs and other substances found in the Mouth sediments have been detected in a similar Navy shoreline dump site from the same era (1940s and 1950s) called the Manchester Annex, located just across Puget Sound near another Navy shipyard.

In the Draft Settlement Report's Appendix H ("Natural Resources Damage Allocation of Injuries to Natural Resources in the Hylebos Waterway," February 28 2002) there is a table that cites evidence of chemistry detected at particular sites (Appendix 3). The entries on that table are entirely consistent with the conclusions described above regarding the Navy/Todd Dump. As far as PCBs detected at Site 57 are concerned, the pertinent table references two source documents (Ref. ID 276 and 282). Both of those source documents address sampling results from (and near) the Navy/Todd Dump.

4. The Lack of PCBs on the Site 57 Central Shoreline. An assessment of the embankment sediment and soil data extending away from the "Navy/Todd Dump" shows that sediment PCB concentrations rapidly drop to Segment 5 "area background" levels proceeding along the shoreline (southeast) toward the center of Site 57. Adjoining embankment and soil samples in this area showed no detectable PCBs (typically below the Trustee's restoration goal of 130 ppb). The Site 57 outfall is in this central area and the lack of elevated PCBs indicates that significant PCB discharges did not occur. The data are consistent with the lack of evidence of PCB releases from the historical Occidental operations at Site 57, discussed in more detail below.

There was an HCC intertidal sampling location (5209I) on the southern portion of Site 57 where PCBs supposedly were detected at 31,000 ppb. However, due to matrix interferences and other analytical anomalies in the 5209I data results (see Table 1 and Section III.B.2 above), that sample result should be disregarded as spurious. A resampling of station 5209I in 1998 by CRA using high-resolution analytical methods detected a much lower PCB concentration of 470 ppb. See Weston Affidavit (enclosed in Volume II). Moreover, four additional embankment samples were collected in close proximity to 5209I and those samples showed no PCB presence (50 ppb detection limit). Embankment Area Characterization Report (CRA, January 15, 1999). A composite soil sample higher up the bank did show the presence of PCBs, but at a concentration of 990 ppb, much less than the 31,000 ppb supposedly detected at 5209I. The other adjoining areas of the intertidal zone and bank were also tested, and no PCB concentrations greater than 300 ppb were detected. The HCC data report presenting the results for the 5209I sampling and analysis work identified analytical anomalies in the data results. Event 1A and 1B Data Report (HCC, June 3, 1996). Specifically, the data results were not reproducible between two analytical techniques. Therefore, since the 5209I data has no substantiation in the overall field data (particularly the embankment data) and because the analytical results were not reproducible, the data should be considered spurious. The sample should not be relied upon in attempts to ascertain the source(s) of PCB releases in the Mouth area.

5. The Lack of Evidence of Site 57 PCB Releases. The Draft Settlement Report cites no evidence to substantiate releases of PCBs from the historical Occidental operations at Site 57. As discussed above, Appendix 3 included in the Draft Settlement Report's Appendix H does cite two source documents (Ref. ID 276 and 282) containing PCB results from (and near) the Navy/Todd Dump. As discussed above, the data and evidence demonstrate that those PCBs were associated with the disposal of ship construction wastes from Site 56 during World War II.

All of the other Site 57 PCB-related "evidence" cited by the Draft Settlement Report either is mere speculation about upland transformers at the former Occidental plant (Ref ID, 138 and 153) (Appendix 2 included in the Draft Settlement Report's Appendix H) or is the result of sampling in the upland area of the former PRI property (Ref. ID, 138 and 153). Both the transformers and the former PRI sampling areas were located hundreds of feet away from the Hylebos Waterway. There is no evidence of PCB releases from those locations, if any, migrating to the Hylebos. Thus, there is absolutely no evidence for attributing PCB-related alleged NRD to Site 57 (other than to the "North Ten Acres," as a result of Site 56 activities and waste disposal).

## **B. PAHs In The Mouth Area Of The Hylebos**

The distribution of total PAHs within Hylebos Waterway sediments, based on all available data, is depicted on Figure 5. These data clearly reveal that Site 56 is the primary source of PAHs to the Mouth of the Hylebos Waterway. The highest concentrations of PAHs in the Mouth area have been detected continuously along the Site 56 shoreline.

Two moderately elevated areas of PAHs are located immediately adjacent to the "North Ten Acres" of Site 57. Those areas reflect the PAH contributions of the Site 56 World War II waste disposal to the waterway that included, in part, waste incineration and the "Navy/Todd Dump" at that location. See Volume XII (historical photographs). Those areas also reflect the Site 56 World War II vehicle maintenance and fueling that occurred on the shoreline. The vehicle maintenance building had pits underneath that were used to work under vehicles (and undoubtedly for dumping oils, grease and other PAH-laden materials to the immediately adjacent Hylebos). The building also had a 2000-gallon fuel tank near the shoreline, likely the source of fuel spills. See Volume V (National Archives Report, Map 3); Volume XII (historical photographs of the vehicle maintenance building).

These PAH areas along the "North Ten Acres" and the rest of the Site 57 shoreline also reflect the oil spills that occurred during the dismantling of ships by the Navy in the post-war Naval Station Tacoma era and by Zidell Dismantling in the 1960s and 1970s. See Volume XIII (Navy and Zidell 104(e) responses); Volume XIV (Zidell documents from Ecology and EPA). Ecology reports document the oil spills from Navy ships during the Zidell dismantling activities. See Volume XIV.

In addition to ship dismantling, the mooring of Navy ships in the Mouth area also contributed PAHs via bilge dumping and other releases. Recent Ecology complaints about Navy oil spills in Puget Sound demonstrate Navy ships to be chronic sources of fuel and oil releases. See Volume XVI. The Navy has operated and moored ships in the Mouth area from approximately 1917 to the present. Those activities certainly caused nearly continuous discharges of PAHs in various forms. It should be noted that the Navy moored ships for a long time at the former "PRI" dock at the south end of Site 57. See Volume XII (Navy moorage lease). Releases from those vessels likely explain, in part, the presence of PAHs at that location. Likewise, PAHs detected adjacent to the Naval Reserve Center facilities at Sites 59 and 60 are attributable to vessels and the documented releases from Naval Reserve Center operations. See Volume XIII (Navy 104(e) response). A petroleum storage and distribution facility was located on Site 59 for many decades. It was owned and operated by General Petroleum and then the U.S. Air Force.

While the former Occidental facility at Site 57 did utilize fuels and materials containing PAHs, the instances of releases to the Hylebos were very rare and involved extremely small volumes. See Ref. ID 144, 145, and 146. The petroleum distribution facilities at the former PRI property primarily involved upland tanks far-removed from the Hylebos and a truck-loading area on Alexander Avenue. Some relatively minor releases of petroleum products from shoreline activities likely reached the Hylebos. However, the data and historical facts demonstrate that the magnitude of PAH releases from Site 57 were miniscule compared to the PAHs contributed to the Mouth area by surrounding activities at Sites 56, 59 and 60. Indeed, considering the distribution of PAHs depicted on the attached Figure 5, PAHs arguably attributable to Site 57 constitute less than 1% of the mass of PAHs in the Mouth area.

### **C. Metals In The Mouth Area Of The Hylebos**

In light of the history discussed above, it is clear that many of the metals detected on the Site 57 shoreline should be attributed to activities associated with Site 56 (especially the "North Ten Acres" and the "Navy/Todd Dump" area). In particular, the Draft Settlement Report should be revised to attribute the following metals to Site 56 rather than Site 57: antimony, arsenic, chromium, copper, some (not all) lead, mercury, nickel, TBT, and zinc. See Draft Settlement Report's Appendix I in Appendix H ("SOC Distribution Maps").

### **VI. MOST, IF NOT ALL PCBs, PAHs, AND METALS (AND RELATED ALLEGED NRD) IN THE MOUTH AREA SHOULD BE ALLOCATED TO SITE 56 (AND RELATED OPERATIONS ON OTHER MOUTH SITES)**

The evidence and data discussed above demonstrate that the Draft Settlement Report has erroneously attributed releases of PCBs, PAHs, metals and other compounds to Site 57. As a result, the Draft Settlement Report's allocation of alleged NRD to Site 57 is significantly overestimated and should be revised. The evidence and data demonstrate that most, if not all, of the alleged NRD attributed to PCBs, PAHs, metals and other chemicals should be allocated to Site 56 (and related operations on other Mouth Sites 59 and 60).

The Draft Settlement Report's allocation of PCB and PAH releases (and associated alleged NRD) should be refined as follows:

<b>PCBs</b>	<b>Draft Settlement Report<sup>13</sup></b>	<b>Proposed Refinements</b>
Site 56 (Including "North Ten Acres" and Navy/Todd Dump on Site 57)	10%	70%
Site 57	60%	0%
Others	30%	30%
<b>PAHs</b>		
Site 56 (Including "North Ten Acres" and Navy/Todd Dump on Site 57)	63%	79%
Site 57	12%	1%
Others	25%	20%

## **VII. SIGNIFICANT ISSUES PERTINENT TO SITE 57 (THE "OCCIDENTAL" SITE)**

### **A. The "North Ten Acres" Of Site 57 Has A Unique History And Chemical "Footprints" And Should Be Addressed As Part Of Site 56.**

As discussed above, the "North Ten Acres" of Site 57 originally were part of Site 56. Occidental's predecessor purchased that property from Todd Shipyards in 1937. Then, during World War II, the Navy/Todd Shipyard leased the "North Ten Acres" for use primarily for waste handling, incineration and disposal. As a result, the "Navy/Todd Dump" contains PCBs, PAHs, metals and other compounds that reflect the wastes discharged to the Hylebos by the World War II shipyard. The area also was used for shipyard vehicle maintenance, and a 2000-gallon fuel tank was located

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<sup>13</sup> The Draft Settlement Report attributed the "North Ten Acres" and Navy/Todd Dump to Site 57.

near the shoreline—those activities likely released PAH, solvents, etc. to that area and the waterway.

The unique history and chemical footprint of the "North Ten Acres" justifies that it be addressed as part of Site 56 for allocation purposes. In any event, the "North Ten Acres" is not relevant to an Occidental NRD settlement with the Trustees.

**B. The Draft Settlement Report Erroneously Attributes The "North Ten Acres" Chemistry To All Site 57 Operations**

No matter whether the "North Ten Acres" is allocated as part of Site 56 or Site 57, the Trustees should revise the Draft Settlement Report to correct the erroneous attribution of the "North Ten Acres" chemistry to the Site 57 operations. As demonstrated by the factual history, data, and analyses described above, the "North Ten Acres" chemistry is attributable to shipyard operations at Site 56 rather than the former Occidental operations at Site 57. Accordingly, the alleged NRD pertinent to PCBs, PAHs, metals and other compounds should not be allocated to Site 57.

**C. The Chemical Releases Attributable To Site 57 Operations All Occurred Prior to 1980 In Substantial Compliance With Applicable Law, And Primarily Through Activities Permitted Or Approved By Appropriate Authorities.**

In August of 1946, prior to the start-up of the Hooker-Detrex solvents plant at Site 57, the Washington Pollution Control Commission approved the plant's discharge of lime effluent and related process residues to the Hylebos Waterway (copies of pertinent correspondence are included in Volume XVII). Discharge of lime effluent, and "lime barge overflow," was incorporated into the 1956 Pollution Control Commission discharge permit, and subsequent permits (copies included in Volume XVII). Those operations generated most of the HCB, HCBD, and tetrachloroethylene released to the Mouth Area.<sup>14</sup> The solvents plant at Site 57 was closed by 1973.

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<sup>14</sup> As discussed above, those compounds likely were also released in some quantities from the Site 56 and Site 59/60 shipyard activities.



**D. Occidental's Comments Regarding Site 57 And Allocation Issues Pertinent to Occidental Are Not Complete**

As set forth above in footnote #1, Occidental's comments have been focused and are not complete. Occidental will continue to assess the Draft Settlement Report and issues pertinent to alleged Hylebos NRD. Occidental hopes that the Trustees will entertain additional comments and discussions in the context of settlement discussions, if Occidental raises matters of particular significance.

**VIII. SIGNIFICANT ISSUES PERTINENT TO AREAS OF THE WATERWAY OTHER THAN THE MOUTH**

**A. The Elf Atochem Facility (Site 19) Was A Significant Source of HCB and HCBD, In Addition To Several Other Chemicals.**

Site 19 is a demonstrated source of HCB and HCBD—chlorinated chemicals have been detected in upland soils, groundwater, seeps to the Waterway, and nearby sediments.<sup>15</sup> This is significant because it explains the presence of HCB and HCBD proximate to Site 19 in the Middle and Head of the Hylebos. Those chemicals and associated alleged NRD should not be attributed to Site 57, at all.

**B. Sources In Segment 4 Of The Waterway, Including The "Taylor Way Properties" Site (Site 47), Also Contributed HCB and HCBD To The Waterway.**

There are very low levels of HCB and HCBD in Segment 4. Those chemicals and associated alleged NRD should not be linked, at all, to Site 57. Furthermore, HCB has been detected upland near the shore of Site 47.<sup>16</sup>

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<sup>15</sup> The following Site 19 data are included in Volume XVII: AWARE Report (November 1981), pp. 1-3 to 1-8, 3-1, Tables 4-14 (disposal of chlorine condensate to lagoons near the Waterway; impacts to lagoons, soils, and groundwater; VOC/SVOCs detected in groundwater); Ecology Analytical Results (June 1981), Tables 7, 11, and 13 (VOC/SVOCs detected in Waterway seeps); EPA Analytical Results (April 1984); HCC Round 1 Data Report (March 20, 1998), Fig. 5-8c (see, e.g., stations 2206I, 2203SM).

<sup>16</sup> Burlington Environmental, Analytical Data (July 1991) (HCB detected at 1000 ppb; HCBD reported at "U" Value, with a 120 ppb detection limit). These materials are included in Volume XVII.

**C. There Is No Evidence That Placement Of Fill Material From The Former Occidental Plant At The "Bonneville Power" Site (Site 15) Resulted In Any Releases To The Hylebos Waterway Or Caused Any NRD.**

The Draft Settlement Report attributes alleged NRD related to PAHs and PCBs to the "Bonneville Power" Site (Site 15). Occidental is associated with that site because some lime sludge fill material from the former Occidental facility at Site 57 was deposited on Site 15 between 1969 and 1974. However, PAHs and PCBs are not compounds pertinent to that Occidental fill material. It should be noted that Occidental and its contractor acted with the permission of both the property owner(s) and the City of Tacoma. Furthermore, Occidental consulted in advance with the Washington Department of Ecology regarding the proposed placement of the fill material, and received the following written response:

The chemical analysis which you provided indicates the material is relatively inert, especially after being mixed with soil as proposed. In fact, lime sludge is a principal ingredient of "soil cement," which is used as stabilized soil sub-base under freeways, etc... Mr. Dan Burrows, the contractor who will maintain the landfill operation and do the hauling, has made every effort to coordinate the operation with the various city, county, and state agencies involved, or even remotely interested. He had obtained the necessary permits and complied with all known regulations, and appears to be dedicated to providing a needed service in a well-thought-out manner. Thus, I thank you for the opportunity to comment on the proposal, but the Department of Ecology has no jurisdiction in this case. So long as the project is carried out as proposed, I believe there will be no environmental damage.

The Occidental fill material deposited on Site 15 has had no impact upon the Hylebos Waterway. Indeed, according to the RI/FS for the site:

BPA contracted with CH2M HILL to determine whether the BPA Tacoma Substation was a possible source of constituents to the sediments of the Head of the Hylebos Waterway Problem Area. This study involved the identification of current and historical potential pathways of migration from the substation to the waterway, and the sampling of these pathways to determine whether the following constituents were present: PCBs, high-

molecular weight polynuclear aromatic hydrocarbons (HPAHs), arsenic, and zinc. Pathways that were sampled in September 1993 included shallow groundwater beneath the substation, the substation stormwater collection system, and several ditches draining the property, including the drainage ditch in the southeastern portion of the property.

RI/FS Prepared by CH2M HILL (1996), Section 3.9, pp. 41-42. In all sediment samples collected from the drainage ditch proximate to the Occidental fill material, volatile organics associated with the lime sludge were nondetectable. Id. at Section 3.9, pp. 41-42; Section 7.4, p. 74; Table 9. Subsequently, two surface water samples were collected from the area. In both samples, all VOCs were below detection limits, with the exception of PCE at a very low concentration of 11 ug/L in one sample. Id. at Section 7.4, p. 74. Given the location of that sole PCE result, its very low level, and all of the other sampling events that failed to detect VOCs, it is extremely unlikely that any PCE has migrated from Site 15 via the drainage ditch. Indeed it has been demonstrated that no migration to Hylebos sediments has occurred. It is simply unreasonable to speculate that surface migration to the Hylebos has occurred, traversing approximately one circuitous mile, crossing at least three roads and traveling over one-quarter of a mile in the Fife Ditch, and then entering Hylebos Creek over one-half mile above the Head of the Hylebos Waterway.

Groundwater is "considered to be an insignificant source of [Site 15] offsite contamination." Id. at Section 8.2, p. 87. There is no evidence to suggest that chlorinated organics associated with the Occidental fill material have migrated via groundwater the very long distance to the Hylebos Waterway.

Finally, and perhaps most significantly, extensive sampling and analysis in the Head of the Hylebos Waterway demonstrate that the Occidental fill material on Site 15 has had no impact whatsoever on the Waterway. The chlorinated organics associated with the Occidental material were not detected in the intertidal area at the mouth of Hylebos Creek or in the subtidal sediments of the Waterway's Head. HCC Final Event 1A/1B Data Report (June 1996). Thus, it would be entirely inappropriate, and unsubstantiated by the facts, to draw any inference that Occidental fill material at Site 15 contributed in any way to alleged NRD in the Hylebos Waterway.<sup>17</sup>

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<sup>17</sup> The documents cited in this section can be provided to the Trustees, if requested.

**D. The Former Occidental Plant Had No Connection With the "Port of Tacoma (3002 Taylor Way)" Site (Site 13).**

The Draft Settlement Report erroneously links Occidental to Site 13. None of the cited supporting materials contains any Occidental reference. There is no known or demonstrated connection between Site 13 and Occidental.

**E. These Comments Do Not Address Allocation Issues Pertinent To Most Sites In Segments 1 Through 4.**

Occidental's comments have been focused somewhat narrowly due to time constraints, and many sites have not been addressed (or have been addressed very briefly). Accordingly, Occidental's comments should not be interpreted as concurrence with (or acquiescence in) the allocations attributed to such sites in the Draft Settlement Report.

**IX. COMMENTS REGARDING RESTORATION "CREDIT" ISSUES**

**A. Refinement Of Restoration Time Frames Following Completion Of Remediation From 10 Years To 4 Years**

Consistent with monitoring data available from regional capping and dredging projects in Puget Sound, habitat functions associated with mudflat and subtidal silt substrates are expected to develop rapidly within months of construction, with nearly full function provided within a period of approximately 3 to 4 years after construction (e.g., see Parametrix 1997).<sup>18</sup> Based on these data, a conservative 4-year (roughly linear development) restoration time frame estimate is appropriate and should be incorporated into the Draft Settlement Report's HEA. The restoration time frame of 10 years assumed in the Draft Settlement Report is overly conservative, when compared with empirical data on regional restoration time frames, particularly for fine-grained habitats. Other recent HEAs performed by NMFS staff (e.g., St. Paul Waterway mitigation analysis) used a four-year recovery time frame for restoration of mixed fine-grained substrates.

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<sup>18</sup> Parametrix 1997. St. Paul Waterway Remedial Action and Habit Restoration Project: 1997 Monitoring Report. Prepared for Simpson Tacoma Kraft Co., Tacoma, WA and Champion International, Stamford, CN by Parametrix, Inc., Kirkland, WA.

**B. The Draft Settlement Report Should Incorporate The Concept Of "Priority Habitat Values" For Restoration "Credit" Purposes.**

The Trustee restoration "credit" model should reflect the status of a proposed restoration site as a priority habitat area if it provides especially critical habitat functions due to its features and/or location. This concept of "priority habitat values" is consistent with the Trustees' approach to Commencement Bay habitat restoration. It also is consistent with efforts to assess the landscape and "connectivity" of restoration sites in Commencement Bay (e.g., see Simenstad 1999). In other areas of Puget Sound (e.g., see Bellingham Bay Comprehensive EIS), these "priority habitat values" are recognized as providing approximately 25% greater habitat function, relative to other sites without such characteristics.

**X. COMMENTS REGARDING PAST TRUSTEE  
ASSESSMENT COST ALLOCATION ISSUES**

**A. The Goal Should Be To Allocate Past Trustee Assessment Costs Fairly—Recognizing The Assessment's Benefit To All Parties, And Accounting For The Uncertainty And Lack Of Information Regarding Many Sites/Parties.**

A fair allocation of past assessment costs should recognize that all parties have benefited from the assessment, and that complete and precise information is not available for many operations and sites. All PRPs have benefited as the assessment has framed the scope and extent of alleged NRD. The assessment and the Draft Settlement Report are the very tools by which the allocation of alleged NRD can be accomplished—the Trustees's settlement process could not exist, much less succeed, without those tools. And, all of the PRPs have caused the need for the assessment, due to the presence of their facilities, and their releases of chemicals to the Hylebos.

The allocation of past assessment costs also must address the factual and technical uncertainties and inequities. It would be unfair to rely entirely upon the factual record developed to date. There are huge disparities in the information available regarding the various sites and operations associated with them. For that reason, the "cost" of uncertainty and lack of complete information should be taken into account in the allocation of past costs so as not to punish parties for which there is a more detailed factual record. This can be accomplished, in part, by distributing appropriate costs widely, on a per capita basis. The Draft Settlement Report's allocation of past assessment costs should be revised to accomplish this per capita distribution instead of allocating all assessment costs in proportion to alleged shares of NRD.

**B. Past Trustee Assessment Cost Allocation Methodology—There Should Be Subcategories Of Per Capita Assessment Costs, Specific Hylebos Assessment Costs, And General Hylebos Assessment Costs That Are Allocated Differently.**

For the reasons discussed above, past assessment costs and alleged NRD should be differentiated, and assessment costs should be allocated more broadly than the latter. In addition, past assessment costs should be divided into three separate subcategories: Per Capita Assessment Costs, Specific Hylebos Assessment Costs, and General Hylebos Assessment Costs. As discussed below, these subcategories should be allocated differently.

Per Capita Assessment Costs are those expenses that constitute the "infrastructure" of costs that have been necessary to address the Waterway generally. These expenditures have benefited all PRPs essentially equally. They were required to initiate and support the assessment. They include costs such as CBN/T area-wide costs attributed to the Waterway, the Trustee sampling programs (including CBN/T area-wide work, as well as efforts devoted to the entire Hylebos, general injury assessment activities, HEA model development, PRP searches, Trustee coordination with EPA, community relations efforts, site mapping, gathering historical photography, compiling existing data, general project management, and summarizing existing information. Per Capita Assessment Costs should be allocated through per capita distribution to all PRPs.

Specific Hylebos Assessment Costs are those expenses that have been incurred to address particular issues and areas, such as site-specific chemistry and particular geographic locations. Specific Hylebos Assessment Costs, wherever possible, should be allocated only to those parties associated with the pertinent issues or areas. For example, only those parties associated with PCBs should be assessed various shares of the expenses of the special investigation and analyses of PCB issues performed by the Trustees, according to their relative responsibility for PCBs.

Those Assessment Costs that are neither Per Capita nor Specific—the majority of the expenses necessary to assess the Waterway—should be considered General Hylebos Assessment Costs. Those expenditures should be allocated to all PRPs, in proportion to their alleged NRD.

**C. Past Trustee Assessment Cost Allocation—Given The Circumstances Of Occidental's Long-Pending Settlement Discussions With The Trustees, And The Substance Of The Proposed Occidental Settlement, Occidental Should Not Be Expected To Bear The Assessment Costs.**

When Occidental resumes its settlement discussions with the Trustees, Occidental will advocate that the circumstances of its long-pending settlement discussions and the substance of the proposed settlement should eliminate Occidental's alleged obligation to bear past assessment costs.

**XI. COMMENTS REGARDING THE USE OF THE DRAFT SETTLEMENT REPORT AS A "STARTING" POINT FOR FINALIZING THE OCCIDENTAL SETTLEMENT**

In evaluating the NRD settlement that is appropriate for Occidental's circumstances, the Trustees should keep in mind that Occidental's "litigation position" would strenuously assert that the Trustees have absolutely no basis for recovery against Occidental. That "litigation position" could be sustained on any number of legal, scientific, and/or evidentiary grounds. However, as the Trustees are very aware, Occidental has already entered the arena of compromise and settlement. Success in that arena requires that both Occidental and the Trustees acknowledge that "quantification" of alleged NRD (not to mention "proof" of alleged NRD) and "quantification" of restoration "credit" inherently involve debated "professional judgments" and assumptions. Furthermore, there must be reciprocal recognition that appropriate NRD settlements should be crafted for particular PRP circumstances and site-specific restoration projects. Beginning from that common ground, Occidental is very optimistic that settlement with the Trustees can be achieved expeditiously and that the court will approve the terms of the Occidental settlement.

In anticipation of settlement negotiations (and presentation of settlements for court approval), Occidental strongly encourages the Trustees to expressly acknowledge that the Draft Settlement Report (as is, or as revised in the future) is a settlement "tool" that is based upon numerous debatable "professional judgments" and assumptions. The judgments and assumptions applied in the "habitat equivalency analysis" ("HEA") model do not yield "scientific truth." Likewise, the allocation judgments and assumptions used by the NRD allocation consultants can be disputed. The strength of the evidence (or propriety of factual "inferences") for those judgments and assumptions is inevitably variable and subject to dispute. The Draft Settlement Report does not account for the general and PRP-specific "litigation risks" that must be confronted in settling NRD claims. Alternate "professional judgments" and

assumptions will yield results (or ranges of results) that differ from those in the Draft Settlement Report. The general framework for restoration "credit" does not anticipate all site-specific variables that may be relevant to evaluating the relative "settlement value" of a particular restoration project. Accordingly, the Trustees should acknowledge that the Draft Settlement Report is only a starting point for settlement negotiations (even if it is revised to address PRP comments). PRP-specific negotiations may lead to settlements that vary from the Draft Settlement Report's allocated shares of alleged NRD and past Trustee assessment costs.

Occidental's comments regarding the Draft Settlement Report do not set forth Occidental's "litigation position." Instead, the comments are submitted from the perspective that HEA can be a useful settlement tool (arguably a significant Occidental concession in itself). Even from that perspective, the scientific data and factual evidence demonstrate that the Draft Settlement Report significantly overestimates both the alleged injury to Hylebos Waterway natural resources and the alleged allocated share of that injury attributed to the former Occidental operations at Site 57. Furthermore, the Draft Settlement Report attributes an excessive share of past Trustee assessment costs to Occidental. In any event, it is time to finalize the pending Occidental/Trustee settlement discussions.

## **X. CONCLUSION**

The Draft Settlement Report significantly overestimates both the alleged Hylebos NRD and the allocated shares of that alleged injury attributed to the sites pertinent to Occidental's historical operations on the Hylebos. This conclusion is demonstrated by the data, analyses, and evidence discussed in these comments. Most significantly, the Draft Settlement Report erroneously attributes releases of PCBs, PAHs, metals and other compounds to the "Occidental" site (Site 57). When data and historical information previously unavailable to the Trustees or not used in the Draft Settlement Report are assessed, it is very evident that Site 57 was not the source of most (if not all) of those chemicals in the Mouth area of the Hylebos. Those chemicals (and the related alleged NRD) should be attributed to the ship building, maintenance, and dismantling activities that have occurred in the Mouth area (on almost all sites) for nearly 85 years.



## **ATTACHMENTS, FIGURES AND TABLE TO OCCIDENTAL COMMENTS**

### **Attachments**

- A Draft Settlement Report Site Numbering Names Maps
- B Index to Notebooks Submitted with Occidental Comments  
(Volumes I through XVII)
- C CD/ROM Containing Sediment Sampling Data

### **Figures**

- 1 Segment 5 Cleanup Area
- 2 Segments 3 and 4 Cleanup Area
- 3 Hylebos Waterway Sediment Sampling Locations
- 4 Total PCB Concentrations
- 5 Total PAH Concentrations
- 6 HCB Concentrations
- 7 HCBd Concentrations
- 8 Flatfish Health Indicators in the Hylebos Waterway Relative to  
Other Puget Sound Sites

- Table 1** HCC and Trustee PCB Results